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An Address
ON
DIABETES*

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THE more satisfactory results which may be obtained by the modern treatment of diabetes mellitus, as compared with those of not many years ago, are evident from the data to be discussed presently. I quote the experience of the Montreal General Hospital for the year 1925, not because it is unique, but because of the availability of the data. Other large institutions have, undoubtedly, had the same experience.

From January to December, 1925, one hundred and eleven patients were admitted to the wards, and one hundred and fifty-one were treated in the diabetic out-door clinic. Owing to the lack of bed accommodation, it has been the general practice during the last few years not to admit mild diabetics to the wards, unless treatment in the out-door clinic proved unsuccessful, or the disease was complicated by, or associated with, some other condition requiring ward care. The organization of the diabetic out-door clinic is such that with the assistance of the physician, dietitian and laboratory technician, mild diabetics are enabled to receive the necessary treatment and usual education, including construction of diets and urinalysis.

Of the indoor cases, seventy-nine were in the medical and thirty-two in the surgical wards. Of the medical cases there were no complications in fifty-two instances. The following table presents a list of associated conditions or complications and their incidence met with in the remainder:

Pulmonary Tuberculosis	3
Myocarditis	3
Endocarditis acute	2
Cerebral hæmorrhage	2
Arteriosclerosis	5
Acute tonsillitis	1
Chronic nephritis	1
Angina pectoris	1
Pneumonia	2
Rheumatoid arthritis	1
Acute nephritis	1
Hyperthyroidism	2
Chronic pancreatitis	2
Cerebral lues	1

In the surgical group the following is the list of complications or associated conditions and their incidence:

Cholecystitis	2
Pyonephrosis	1
Perforated duodenal ulcer	3
Carbuncle	9
Gangrene (foot)	5
Strangulated hernia	2
Furnculosis	1
Acute appendicitis	1
Osteomyelitis (foot)	1
Abscess of thigh	1
Duodenal ulcer	1
Fractured femur	1
Stricture of urethra	1
Carcinoma of intestine	1
Acute pancreatitis	1
Peritonitis (appendicitis)	1

For this group nineteen major operations were performed and in the following table are listed the operative data in reference to the general anæsthetics employed.

Approximate duration (minutes)	*Anæsthetic*	
	Ether	*Nitrous Oxide*
15	..	2
30	2	1
45	..	1
60	2	..
75	1	..
90	2	..
120	3	..

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It will be noted that ten patients required ether, and in eight of these the duration of the anæsthetic was one hour or more. Four were controlled with nitrous oxide. Of the eighteen remaining cases eleven had spinal or local anæsthesia, and seven individuals had no operations.

A study of the successes and failures of both groups and of the clinic as a whole, emphasizes certain cardinal points in the successful management of the diabetic. There were no deaths from diabetes in the medical wards during the entire year. In the surgical group there were five. Two patients died of septicæmia following carbuncles, and three of the same condition following gangrene of the extremities. In four of these five cases, the diabetes appeared under control at the time of death. The blood sugars were either normal or only slightly increased, and the urines contained no sugar nor acetone bodies. In the remaining case, though there was a marked hyperglycæmia and glycosuria, no acetone bodies were found in the urine, and the CO_2 combining power of the plasma did not suggest the presence of an acidosis. During this year, two other patients of the clinic died at home: one of diabetic coma, and in the other case the cause of death is unknown.

The "crude" death rate for the clinic as a whole was approximately 1 per cent for the year, being practically the same as in 1923 and 1924. It may here be observed that a rate of 1 per cent per annum approximates the normal "crude" death rate for the population as a whole.

These data appear to be significant, in view of the method employed by the clinic of recording the causes of death. Though the regular procedure is followed for ordinary purposes, one of the investigations now being carried out in the diabetic clinic is to compare the death rate of a group of diabetics with the death rate of the population as a whole. It has, therefore, been the practice *for the purpose of this investigation,* to attribute all deaths as due to diabetes, whether death could or could not be accounted for by a complication or an associated condition. By having done this it is recognized that we were not following the official statistical method of treating "joint causes of deaths." We have done this for the reason stated, and also for another which appears to be valid. We have been unable to reject any individuals from the list who died in consequence of some accident not connected with the evolution of the disease. It is also recognized that more information would be obtained from "adjusted" than from "crude" rates, and that there is a danger of drawing conclusions from the latter. Since however we are dealing with the same population and the same area and our object is to *compare death rates from year to year in the same group.* the "crude" data yield approximately the necessary information.

As I have just stated, these data are presented not because of their uniqueness, but because of their availability, and undoubtedly all other large institutions show the same results. These demonstrate the more satisfactory methods by which it is now possible to treat diabetes. In view of this, and the fact that our experience of 1924 was practically so satisfactory, we are now confronted with what appears to be a paradox. If we compare the death rates of large populations of the days before insulin (1921), with the latest available since insulin (1924), we find no decrease, as the following tables demonstrate.

Deaths from Diabetes—1921 and 1924
(per 100,000 estimated population)

	1921	*1924*
England and Wales	10.8	10.9
United States:		
Total registration area	16.8	16.6
All registration cities	20.1	20.0
All registration states	20.2	20.2
Rural part of registration states	13.6	13.4
Registration cities in non-registration states	17.2	12.3
Canada:		
Quebec	7.7	9.4
Ontario	11.4	10.8

Courses of Death Rate from Diabetes in 1924 in 34 States and 60 Cities of over 100,000 Population in the United States as Compared with 1921

	Increase	*Decrease*	*No change*
Cities	25	28	7
States	15	12	7

It will be noted that the death rate per 100,000 population in England and Wales in 1921 was 10.08 and in 1924 it was 10.9. For this information I am indebted to Dr. G. V. Howell of the General Register Office in London. Through the courtesy of Dr. Wm. H. Davis, Chief Statistician for Vital Statistics in the United States, I have been able to obtain some of the still unpublished data of that country

for the same two periods (1921 and 1924). The death rates in the United States for the two periods were, respectively, 16.8 and 16.6 per 100,000 estimated population. Of all the registration cities they were 20.1 and 20.0, of the registration states 20.2 and 20.2, and of the rural part of the registration states 13.6 and 13.4, respectively. A decrease was found only in the registration cities in non-registration states. Of these cities, in 1921 the death rate was 17.02 and in 1924 it was 12.3. Of sixty cities of populations over 100,000, twenty-five showed an increase, twenty-eight a decrease, and no change in seven. Of thirty-four states fifteen showed an increase, twelve a decrease, and seven showed no change. Any difference less than 0.5 per 100,000 population was regarded as no change. Considering smaller populations, in Canada, in the Province of Quebec, the death rate was 7.7 per 100,000 population in 1921 and 9.4 in 1924. In Ontario it was 11.4 and 10.8 respectively.

There may be various reasons for this general absence of a decrease in the death rate, and it may be more apparent than real. It can hardly be accounted for by improved methods of diagnosis, since there have been no striking changes in the methods of late. One factor may be the increased attention paid to the disease, owing to the publicity following the advent of insulin. It will be recalled that an increased death rate was noted following the announcement of Allen's dietetic treatment in 1914. As a matter of fact such an increase was also noted in 1922 and 1923. Another explanation may be the one suggested by the Director of the United States Census for the increase in 1922, namely, the prosperity since the war, resulting in over-eating and under exercise. This same author found it difficult to explain, as only apparent, the differences noted in the death rates of the various race stocks, and concluded that it was a much safer attitude for the public health worker to regard the increase as real, rather than apparent, and emphasized the importance of careful attention to diet. Considering the source of this opinion, and the method of investigation upon which it was based, its value cannot be overestimated, and the present absence of any decrease in the death rate must be regarded as real. The tendency to decreased attention to dietary regulation since the advent of insulin, and the abuse of insulin by following the idea of "more insulin more food", are probably the more potent factors. A large number of diabetics who do not require insulin are employing this drug. During the last year thirty-one patients came to our diabetic clinic, with a history of having received insulin. Of these, twenty-six were not only found not to require it, but were treated successfully in the out-door without admission to the wards. The remaining five individuals required insulin. Three of these, not unlike some of our own patients who refuse to follow instructions, were taking large doses and eating large quantities of food. They felt and appeared to be very well, had a very good colour and were much overweight. How misleading this picture is! The blood sugars of these patients were 0.224, 0.261 and 0.213 per cent respectively. In spite of their appearances these individuals, in view of their blood sugars, must be looked upon as "active" diabetics, and therefore exposed to all the dangers of the disease. It is difficult to conceive of a diabetic being under control in the absence of a normal blood sugar. A normal blood sugar is the most reliable index of a normal carbohydrate metabolism. It indicates that the combined mechanisms of oxidation and storage can keep pace with the rate at which sugar is being absorbed into or produced by the body. I am aware that there are workers in this field who tend to discount hyperglycæmias, and have actually recorded, in print, their practice of giving large doses of carbohydrate combined with large doses of insulin. That practice may be correct. If it is, we must change our conception of the nature of diabetes and principles of treatment. Joslin, who has probably had the largest experience with diabetes in the United States, opposes the idea of overfeeding. Looked at from a statistical point of view—on the basis of probabilities—in view of this authority's large experience, I am inclined to accept his view.

If the death rate from diabetes has decreased in the group of hospital treated cases, and shows no decrease for the whole population of diabetics, the only deduction is that the death rate amongst individuals not observed in hospitals has increased. A conclusion which might be drawn from this is that hospital treatment is indispensable for diabetics. Such a conclusion would be quite erroneous and rather unfortunate for the

great majority of diabetics. To quote Joslin, "One cannot too strongly emphasize the mild character most of the diabetes." It is because of this fact only that success attends the treatment of patients in out-door clinics. The first point that I wish to emphasize, and probably the most important for this audience is that providing the physician recognizes the underlying principles of the treatment, and can properly classify his patients into mild, moderately severe, and severe cases, by far the majority of diabetics can be treated successfully without being subjected to the inconvenience of hospitalization. The inconvenience of hospitalization is an important factor in Canada. This country is not so thickly populated that all diabetics are within reasonable distance of a hospital, in which the usual modern laboratory procedure employed in the investigation of diabetes are performed. It is obvious that the forms of treatment under the two sets of conditions must be different, but it does not necessarily follow that the hospital method is the most effective. Seen from a statistical point of view this deduction is obvious. The logic is simple.

The influence of any particular method of treatment upon the mortality rate of any particular disease is the best index of its efficiency. Treatment of any particular kind for any particular disease influences its mortality rate *appreciably* only when that treatment is applied to the *greater part of the population* exposed to that disease. Assuming environmental conditions which yield *strikingly* good results in treatment are possible for a few individuals only, whereas conditions yielding good results only are obtainable by the many, it is obvious that the most effective treatment will not be that which yields *strikingly good* results in the few, but that which yields *good* results in the many. Strikingly good results in the treatment of diabetes may be obtained in hospitals. Good results may be obtained at home. Since the majority of patients are treated at home the conclusion is obvious.

The experience of various workers with the various forms of treatment is fairly well recorded in the literature, and from a statistical treatment of the findings of different workers, it is possible to lay down certain general rules for successful management. These rules may be general, but on the whole, will be found dependable, since they will apply to by far the great majority of diabetics. Since the greater number of these will be treated at home, they will be treated by the greater number of this audience, and I have, therefore, no hesitation at the risk of repetition, to emphasize certain cardinal points.

Early diagnosis.—The earlier the diagnosis of diabetes is made the more successfully can the individual be treated either by diet or insulin. Early diagnosis is of still greater importance because the majority of diabetics who die *from the disease itself,* die during the first two or three years of their diabetic life. The great majority of diabetics who have had the disease for a great period of time die *of the complications,* rather than from the disease itself. To Root and Warren, who have made a clinical and pathological study in a series of diabetics in Joslin's clinic, this rarity of death from uncomplicated diabetes in cases of long duration is regarded as consistent with the conception of some regeneration of functioning pancreatic tissue. We can only hope that this conception proves correct. Early control of the disease also exposes individuals less to one of the most common complications, namely, vascular disease.

The earliest and probably the only indication of the presence of diabetes is glycosuria, and the importance of this sign cannot be stressed too much. No individual should be regarded as an alimentary or renal glycosuria until proven so by all modern laboratory facilities available. The "sugar tolerance tests" commonly employed, including blood and urine analyses for sugar following glucose ingestion, are not always sufficient to eliminate a diagnosis of diabetes. It can readily be shown that mild diabetics may by rigid dietary restrictions a few days prior to the test show curves identical to that of the normal. This test thought at one time to be almost infallible, has become a real source of anxiety to insurance companies. Transient or intermittent glycosurias should always receive careful consideration. The relation between mortality and glycosuria was strikingly demonstrated at a recent meeting (1925) of the Association of Life Insurance Medical Directors of America. Quoting the experience of the New York Life Insurance Co., Rogers and Hunter showed that with glycosurias of all kinds, intermittent or constant, traces or moderate amounts,

RELATION BETWEEN GLYCOSURIA AND MORTALITY
(*Experience of New York Life Insurance Company*)

Glycosuria		*No. of cases*	*Actual deaths*	*Expected deaths by a.m. selected table*	*Ratio of actual to expected deaths (per cent)*
Degree	*Type*				
Trace	Intermittent	865	49	35.3	139
Moderate	Intermittent	351	17	10.3	165
Trace	Constant	534	49	24.8	198
Moderate	Constant	483	82	22.8	360

the ratio of actual to expected deaths was high, as the table shown above demonstrates:

Treatment.—Three most important considerations in treatment, other than the usual dietary regulations, are elimination of foci of infection, counteracting obesity and exercise. It is remarkable how often the tolerance for carbohydrates may improve after the removal of infected tonsils, or an infected tooth, without any alteration in treatment. Diabetics, apparently very severe and requiring large doses of insulin may improve to the extent of requiring no insulin. Disease of the gall bladder and its passages accounts for about 25 per cent of all adult diabetes. Here the surgeon must play his part.

As to obesity, too great stress cannot be laid upon this phenomenon. Allen has laid down the great principle of under-nutrition in the treatment of diabetes, and this applies as well to-day as before the days of insulin. It is a most important principle, since with it practically 90 per cent of all diabetics may be treated successfully outside of hospitals, and without the use of insulin. We employ the term "under-nutrition" to-day, however, in a slightly modified manner. Before the days of insulin under-nutrition meant keeping individuals on a diet which was practically incompatible with their daily duties. Under-nutrition to-day means keeping individuals at the normal height-weight relationship. The following table may be found useful. It is not strictly applicable to *all* individuals, but applies to the great majority, and is sufficiently reliable to eliminate the necessity of cumbersome height-weight tables, and can, practically, be memorized.

Ages	*15–25*	*26–30*	*31–35*	*35+*
Normal weight (lbs.) for a height of 5 feet	120	125	130	135

It will be noted that all individuals are divided into four groups according to their ages: 15-25, 26-30, 31-35, 35 upwards. If all these individuals were five feet tall, the weights for the corresponding groups would be 120, 125, 130, and 135 pounds respectively. *Allow three pounds for each inch over five feet.* For example, an individual thirty-six years of age with a height of 5′ 3″ should weight 150 pounds (that is 135+5×3). For *females it is a safe practice to deduct five pounds from the final result.*

Exercise is important since it relieves the muscles and liver from storing excess quantities of sugar, by making the total caloric intake equal to the energy expenditure.

Classification of diabetes.—The particular form of treatment to follow depends, obviously, upon the severity of the disease. Not all in-

Type	*Glycosuria*	*Acetonuria*	*Clinical Signs and Symptoms*	*Effect of Diet*	*Treatment*
1	Transient	None	None. Accidental discovery		At home. Moderate restriction of carbohydrate.
2	Post-prandial	None	Same as above		Same as above
3	Persistent	None	May or may not be present	"Green day" effective	Three "green days" then increase to "final diet"
4	Same	Present	Present	Same	Same
5	Same	Marked	Marked	"Green days" not effective	Build up diet to "final diet." Commence insulin with diet
6	Markedly severe	Precoma			Insulin immediately, then adjust diet

dividuals require the same rigid dietary regulation. Excluding the acute and juvenile forms of the disease, and any sudden lowering of tolerance by infection or trauma, diabetics may be divided, generally, into three groups: (a) those who can be kept sugar free by moderate restriction of carbohydrates, (b) those who require rigid dietary regulation without insulin, and (c) those who require rigid dietary regulation with insulin. The following table is the one which has been generally employed for the categorization of patients in the out-door clinic of the Montreal General Hospital for the past five years, and in the great majority of instances has proven dependable.

Type 1.—In this type of case the glycosuria is transient, and may be absent during intervals of days or weeks. The individual has a *good tolerance* for carbohydrates, and therefore has no acetone bodies in the urine. There are no other clinical signs nor symptoms suggestive of diabetes. The glycosuria is usually discovered accidentally; for example during the course of examination for life insurance. This type of individual requires only moderate restriction of carbohydrates, which includes the elimination of sugar in tea or coffee, avoiding pastries, puddings and candies, and restriction of bread to one slice at each meal, roughly, the size of the palm of the hand of the individual. Such portions will vary between ¾ and 1½ ozs. of bread. With this scheme not more than 75 gms. of carbohydrate will be taken in the form of bread and the average daily intake of carbohydrates will be about 150 gms.

Type 2.—The glycosuria is found more frequently but *after meals only.* The urine in the morning before breakfast is sugar free. The individual still has a good tolerance for carbohydrates, and there are no other clinical signs nor symptoms of diabetes. The treatment is practically the same as for Type 1 except that the 10, 15 and 20 per cent vegetables are excluded. This restriction allows taking the above quantities of bread and keeps the carbohydrate content of the diet within 100 gms.

Type 3.—The glycosuria is still persistent. In spite of this the individual still has a *fair* tolerance for carbohydrates, and therefore has no acetone bodies in the urine. Symptoms may or may not be present. These symptoms may consist of polyuria, and the train of events which usually accompanies it, namely, loss of weight, weakness and thirst. Carbuncles or gangrene of the extremities may be present. This demonstrates the fact that the individual need not be a severe diabetic to have these serious complications. As a matter of fact, of thirty-two individuals with gangrene of the extremities seen in this clinic during the last five years, twenty-six belonged to Type 3. Of the latter eighteen were overweight. One or two days of starvation, or what is known as a "green day" diet in this hospital, (consisting of approximately fifteen grams carbohydrates, twenty fat and twenty-four protein), frees the urine of sugar readily. The treatment here consists, firstly, of rendering the urine of the individual sugar free by starvation or "green day" diet, and then increasing the diet to that corresponding to the individual's minimum requirement. No bread is allowed. With this scheme the average daily intake of carbohydrates is within 75 gms.

Type 4.—The glycosuria is persistent. The tolerance for carbohydrates has been lowered to a sufficient degree to prevent complete oxidation of fats. Acetone bodies are therefore present in the urine. Rarely will this type of patient fail to complain of some symptoms. *Dietary regulation alone is still effective.* The urine can still be made sugar free with one to four "green days", and the urine can still be kept sugar free upon a diet compatible with the daily requirements of the individual without the use of insulin. Vegetables are restricted to the 5 per cent list. The average daily intake of carbohydrates is about 50 gms.

Type 5.—This is merely an exaggeration of the picture of Type 4. Diet alone is insufficient to maintain the individual at his weight for his height, and still meet the daily energy requirements. This individual requires insulin. An individual who cannot tolerate 50 gms. of carbohydrates requires insulin.

Type 6.—This requires no detailed explanation. Insulin treatment should be commenced as soon as the individual is seen.

Insulin.—There are now two methods generally in use in which dietary and insulin treatment are combined. One method is to determine the individual's total requirement of food, due consideration being given to the carbohydrate tolerance, caloric value, fat-carbohydrate ratio and protein requirement. The individual is placed upon this

diet, and as the excretion of sugar in the urine becomes fairly constant, the amount excreted is used as a guide for the insulin dosage. The other method is one by which an attempt is firstly made to render the urine of the individual sugar free by under-nutrition (two to three days of starvation). The diet is then gradually increased to the total requirement. Insulin treatment in small doses is commenced during the starvation days. This is commonly practised in England. Though in the end both methods appear to yield practically the same results, it is our experience that on the whole the latter method, that is treatment by *under-nutrition plus small doses* of insulin in the early stages of treatment is more effective. One of the values attached to this method is that it does not lead to erroneous interpretations of the possible subsequent reductions in the dosage of insulin. Having observed a series of reliable patients for periods of from six months to two years it has been our experience that individuals treated on the principle of *under-nutrition plus small dosage of insulin,* were not able to reduce their original doses of insulin, whereas those who were immediately placed on diets calculated on the basis of total requirements were able to do so.

A possible explanation of these results is that though individuals may be made sugar free by "basal diets" plus insulin, the caloric value of such diets is too high *during the early period of treatment,* and that to an already damaged pancreas is superimposed injury due to overfeeding. What appear to be corroborative results of these findings was the fact that when individuals firstly made aglycosuric by treatment with under-nutrition plus small doses of insulin, were allowed to develop glycosuria and then treated by the other method, it was found possible to reduce the amounts of insulin during the second period *but not beyond those employed originally with the under-nutrition method.* This failure to demonstrate real improvement in tolerance following insulin has, I may say, also been the experience of Harrison at the King's College Hospital of London with practically similar observations on his own cases.

Because of these findings and in view of the small series observed I have attempted to compare our data with those recorded by different workers which are alleged to demonstrate improvement of tolerance. It is obvious that providing the necessary information is available it is possible by means of statistical methods to elucidate the true picture out of a series of what may, at first sight, appear to be discordant results. The general plan of such an investigation is fairly well established.

A most important consideration in making a quantitative estimation of the effects of any therapeutic measure is to consider all the possible variables. Unfortunately the evidence required for statistical treatment was in each of the cases recorded incomplete. In no case have a sufficient number of the possible variables been recorded which may have helped to explain the results obtained. The presence or absence of infective foci and success or failure in their elimination, the basal metabolic rate of the subjects before and after treatment, the amount, frequency and regularity of exercise, the composition of the diet, the degree of under-nutrition attempted, and variations in the potency of different batches of insulin (not a prominent factor now) are a few of the possible variables which may have contributed towards the improvement of carbohydrate tolerance attributed to insulin. Even with a very limited knowledge of the most elementary ideas of statistical methods, it is obvious that no such comparative study could be made. In commenting upon these records, valuable as they may be to their recorders, who may be aware of all of these variables, I can do no better than quote Raymond Pearl, whose experience with medical statistics has led him to remark "From a standpoint of scientific record taking, (these) case histories are most glaringly defective in what they *fail* to record about the patient." When some of these influencing factors are eliminated, and excluding acute and juvenile diabetics, and mild diabetics whose tolerances have been lowered suddenly by infection or trauma the experience at the King's College Hospital of London, and that of our clinic suggests that insulin does not cause an improvement in carbohydrate tolerance—at least over the above periods of observation. Conclusions drawn from the work of two observers only, though identical, must, of necessity, because of the small series of observations, have a limited significance. For the diabetic particularly, the value of such a study of a much larger series is obvious. To avoid the everlasting question "Shall I always be taking insulin?" should, at

least, it appears to me, be a sufficient stimulus for those medical men engaged in the laboratory side of medicine to consider seriously the application of quantitative methods in interpreting their experimental data. To quote again from Raymond Pearl's wealth of pertinent remarks, if more attention were paid to such methods medical men would cease "to try to add cabbages and cows" and draw conclusions from the results.

Whether or not insulin improves carbohydrate tolerance will undoubtedly be proven in time with the accumulation of more experience and the recording of this experience in a form available to all workers for statistical treatment. It is a much safer rule, however, for the diabetic to assume that it does not, but careful attention to diet may; and that the value of insulin lies in assisting the system to utilize the extra amount of food required to meet the simple energy requirements. This may not be very cheerful for those requiring insulin. These individuals should, however, regard the fact that having the disease, they were very fortunate to have acquired it at the time insulin became available. Whether the amounts taken by a patient will require increasing with time will depend much upon how intelligently it is used and how little it is abused.

These findings should also prove of value as a warning to those who represent by far the great majority of diabetics—those who do not require insulin. Early treatment, rigid adherence to dietary regulation, prevention of obesity, and proper care of foci of infection are their measures of safety. *There are no conclusive experimental data available which demonstrate an inherent tendency for the diabetic to get worse.* As a matter of fact there are authorities on this disease who tend to believe in a recuperative power of the pancreas in cases of long duration. This is encouraging and should be equally so to patients taking insulin.

MODERN EVOLUTION OF GYNÆCOLOGY

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EVOLUTION is, essentially, development or growth. Both development and growth, as the names imply, demand progress either forward or back and the forward evolution of the science of medicine in the present century has been truly phenomenal. Of the many branches of modern medicine gynæcology and obstetrics are, and must ever be considered as blood relatives, but to my mind the evolution of gynæcology in the past ten years has far outstripped that of obstetrics, indeed outstripped all branches of modern medicine.

One can well remember less than ten years ago when first class gynæcologists in America considered their department almost entirely a surgical specialty. I have heard more than once slighting remarks by eminent men about *Kelly's Medical Gynæcology*. Medical gynæcology—"there warn't no sich animile." Halfway measures were of no avail in the pelvis. Office gynæcology was a thing of the past. Local applications were purely a source of office revenue, of no value and so scorned by the conscientious practitioner. "We must earn our living in the hospital, not the office. Away then, with local treatments, many douches, pessaries, vaccine inoculations and what nots." Leave petty treatments for petty ills. Did you ask for advice concerning chronic infection of the cervix or tubes, backache in the presence of a retroversion, moderate prolapse, the answer was always "Operate, and no halfway measures."

It is not meant to imply that thorough care was not taken in the choice of treatment. There was. I was always impressed with the care with which patients in a great New York hospital were chosen during my residency there. It was with pride we pointed to the fact that only two in every seven patients admitted

came to operation. This is readily explained in the fact that acute infections, abortions of any sort, and malpositions readily rectified were not surgical cases. The point though is, that the treatment for chronic pelvic infections and persistent malposition was surgery or nothing.

But moderation is the very keynote of existence. Therefore it is evolution that brought the moderationist to the fore in gynæcology. For after all the foreword in medicine must ever be *help* not *eradicate*. Galen expounded wisdom centuries ago when he said "Nature is the Healer, the Physician is but her handmaiden."

One of the most remarkable changes, to my mind, has been in the use of the intrauterine curette in cases of incomplete abortion. Perhaps no instrument of modern times has fallen into such a state of disrepute. Yet ten years ago and less it was the usual treatment for abortion, either clean or septic, and even routine in some first class teaching institutions. I feel that the man who did more than any other one individual to preach the evils of curettage was Polack of Brooklyn. I think it was Polack I once heard say to a body of students, holding a curette in his hand, "Gentlemen, here is an instrument which has undoubtedly caused more deaths than all the hangmen's ropes, guillotines and electric chairs since the beginning of time." Probably he could have included typhoid fever and the Great War and been still conservative in his estimate. To study the protective histology of the pregnant uterus as first presented by Polack, is to become imbued with a thorough respect for the pregnant uterus. To my mind the curette is to-day relegated to one use—as a diagnostic aid in suspected cancer of the corpus.

The evolution in treatment of the diseased cervix presents also a remarkable change. How long is it since the proper treatment for chronic endocervicitis was amputation without fail? Back in the old days? No, only four or five years ago. One remembers the feeling among good men at that time that trachelorrhaphy was an old-fashioned, haphazard and halfway method; that might improve the appearance of the cervix, perhaps improve the musculature, but failed in its most important errand, the removal of diseased tissue. Amputation alone succeeded where all else failed. What countless sterilities, backache and leucorrhœas this procedure cured. Very true, it did, but what of the cost? One must always weigh the disease with the cure. Relative sterility due to endocervicitis is truly unfortunate, but fertility following an amputation of the cervix, whatever be the mode of amputation, is also a serious situation in many cases. The argument is not to compare sterility with amputation but rather to show that the modern trend is to treat the diseased tissue along conservative lines first and leave the radical procedure to a last resort.

In an article written recently by this author* an attempt was made to describe the function of the cervix from an anatomical and physiological standpoint. It was thought that by placing more emphasis on the mechanism of this remarkable organ that more respect would thus be shown it, and consequently less radical treatment. One cannot amputate a cervix, I care not how carefully it be done, without very definitely complicating subsequent labour. Because whether you remove muscle tissue or not you will positively leave behind a circular scar, and low grade connective tissue will not dilate.

Furthermore, it has been pretty definitely proven that chronic endocervicitis *can* be cured by other means than operation. It is not the intention here to go into a discussion of the treatment of endocervicitis. Suffice it to say that the application of a germicide to the cervix and vagina following thorough dilatation and removal of mucus, plus the powder treatment of Gellhorn, plus the cautery treatment of Dickenson where necessary, have proved thoroughly satisfactory in a fair number of cases.

One feels that cervical amputation will soon be relegated to the same category as the uterine curette, *i.e.*, for diagnostic purposes and in those cases of chronic infection with hypertrophy, erosion, eversion and discharge, at the menopause or after. But remember the date—at the menopause or after. It may be that this amputation of the cervix which has had such a remarkable vogue will soon be considered a halfway measure. One would never remove but part of a tube for the surgical cure of tubal infection, or part of both tubes even at or near

*Blair, *Surg., Gyn. & Obst.*, Oct., 1925, p. 473.

the menopause. The same reasoning should apply to the uterus.

It is remarkable the number of amputations that are done on the "precancerous cervix." Such a nomenclature is especially dangerous in the hands of the younger generation of gynæcologists. Remember, cancer never has found origin in a laceration. Cancer in this area is believed to spring only from erosion and the treatment for erosion is surely cautery, not surgery. *I believe that cervical amputation is destined to be considered a halfway measure.*

The attitude towards salpingitis has gradually changed too in the past five years. Of course it has been long established that no surgery can be done on acutely inflamed tubes. It seems a fact that the operative results of experienced men in chronic tubal infections has been on the whole so unsatisfactory that it too is slowly receding to the category of the acutely inflamed.

It is, perhaps, true that the more one becomes experienced in the practice of operative gynæcology the less one operates for the cure of chronic salpingitis. The peritonitis becomes so localized as to cause little or no pain except at exacerbations. Continuous pain comes from adhesions and the general futility of operation for the cure of adhesions is well known. As to the worry about absorption, it is probable that the argument is more speculative than real. Pelvic localization of and immunity towards infection is a very real and remarkable thing.

And what has modern gynæcologic therapy evolved to replace, at least in part, the period of operative treatment? First of all bear in mind the teaching of Curtis, now pretty well accepted as truth, that one attack of acute salpingitis of gonorrheal origin has but a short period of chronicity, and eventually disappears entirely, leaving normal tubes. It is the subsequent attacks that cause permanent chronicity. These subsequent attacks may follow, of course, subsequent inoculations from the male, but very often are re-infections from the lower genital tract. Furthermore, granted we have chronically diseased tubes with which to deal (and I believe we will have in more than 50 per cent of our cases) have we any permanent relief to offer except via the operating table?

The initial infection if gonorrheal (and probably 90 per cent are gonorrheal) invariably leaves tracks as it progresses upwards to the tube. Bartholin glands, Skene's tubules, urethra, cervix—one or all blaze the trail, the "foot-prints on the sands". It is from these depots that our recurrences come far more often than by reinoculation from the male.

We must bear in mind then that the treatment of acute salpingitis consists of more than the usual rest, bowel-hygiene, diet, icebag, vaginal douches, sedatives, etc., but that after the attack has subsided then do we in turn instigate a vigorous offensive against those entrenchments of the enemy enumerated above. I think it is generally found that the greatest trouble is experienced in Skene's ducts and in the cervix. I find the electro cautery necessary in most cases in both areas. A word of warning about the treatment of the cervix may here be well-advised. In order to treat properly one must dilate the canal. Be very gentle about the dilatation. Trauma of the chronic infected cervix is a common cause of subsequent attacks of salpingitis.

The treatment of chronic salpingitis closely resembles that of the acute condition. We must not only treat the condition *per se,* but must cope with the cause of the recurrence, as discussed above.

Little need be said about the usual and time-honoured treatment of chronic inflammation. It is the same in whatever part of the body it be found. Concisely it might be said to consist of *plenty of leucocytes in the right place.* Heat is the usual means of attraction of blood to the part and heat in any form is most advisable. Just here may I say a word regarding the vaginal douche. The douche has fallen in and out of repute so often that one hardly knows its status among reputable physicians from one year to another. The chief cause, of course, was that for so many years vaginal douches were used as a medium of medication. But the vaginal douche as a medication is and must always be a failure, because the medicine in such a vehicle does not reach the seat of trouble unless the trouble be wholly vaginal. No, the real use of the vaginal douche is as a purveyor of heat and properly used is unexcelled in that capacity in inflammations of the pelvis. The patient must be carefully instructed as to detail, that the douche be taken invariably lying flat on the back with hips slightly elevated;

that the douche be taken at a temperature of about 110° to 115° F.; that the water be allowed to circulate slowly by having the bag held low and herself holding the labia together, not too firmly; that the ceremony should take *at least* one-half hour and that the amount of fluid used is of no interest. The question to be answered is not "How much?" but "How long?" I do not picture a vaginal douche properly given with less than four gallons of water. Douches taken with directions as above are of inestimable value in pelvic inflammation.

Another great method of supplying heat to the part is by diathermy. Here is but another vaginal douche using different media but getting the same results, *i.e.*, heat to the part. We remember, of course, that it is not electricity that does the work, but plain old fashioned heat.

Now it is not only very necessary to attract blood to the part, but it is desirable to have in the blood content as many leucocytes as possible. In acute infections nature generally supplies a liberal leucocytosis, but unfortunately not so in chronic conditions. The best way we know to meet the difficulty is by protein therapy.

So much has been written about foreign protein therapy that the most biased must at least give it recognition. As is usual with any new therapeutic measure some are carried away with enthusiasm, while others are equally sure that it has nothing in its favour. Like glandular therapy it will take a long time to get down to a therapeutic working basis, but like glandular therapy it has its ultimate place in the sun.

The physio-chemical explanation of protein therapy is highly interesting; colloidal chemistry borders even on the mysterious. It is, perhaps, sufficient to keep in mind that the product of bacterial invasion, toxin, is antigen and protein in essence; that antigen causes the formation of antibodies in body fluid and that antigen is invariably colloid in nature, therefore protein in nature.

The idea is that cellular activity at the seat of trouble, known as colloid dispersions bring about the remarkable results.

Apart from all this, though, the thing that must arrest attention from the clinician's point of view is that in any form of protein injection it is *absolutely essential* that one gets a positive systemic reaction in order to get results: that is, we must produce that condition of mild serum sickness just short of anaphylaxis known as preanaphylaxis. The findings are fever and leucocytosis.

The days of marked publicity toward vaccines is not so far past. One remembers the autogenous vaccine, and that gradually the profession found that stock vaccines in most cases gave about as good results as did the autogenous. The whole thing was just foreign protein therapy under the name of vaccine treatment. Now whether or not we understand all about the colloid dispersions that doubtless take place, the leucocytosis that invariably accompanies satisfactory treatment results, is readily understood. When, however, in spite of all conservative measures the patient remains a sufferer, then operate.

It is probable that operations for the correction of retroversion of the uterus are still being done oftener than any other single operation on the female pelvis. It is also probable that no other single procedure has done more to discredit gynæcology, excepting the use of the intrauterine curette. Not only is operation for correction of *retroversio uteri* alone inexcusable and indefensible, but it carries with it unquestionably an active danger of gut strangulation. The question of uncomplicated *retroversio uteri* is more an obstetrical problem than a gynæcological one.

I question very much if retroversion in itself ever caused many symptoms. I feel sure that a mobile retroversion never did. Backache, that commonest symptom, comes from many causes, but mobile, uncomplicated retroversion is not one of them, and for those uteri retroverted and adherent, much can be done before operation becomes the final solution. If these cases be given a thorough course of hot vaginal douches for six days twice a day with monkey walk fifteen minutes immediately following and when at rest lying on the stomach; then, on again presenting herself, one can with time and pains replace the uterus in good position in the great majority of cases. Adhesions holding the retroverted uterus against the sacrum are not as common as is generally thought. Probably most men have struggled conscientiously with an apparently adherent uterus and on opera-

tion have been chagrined at the ease with which the uterus came up into position. There were not any adhesions at any time, but a rounded, moist ball had been held in a rounded, moist, yielding cul-de-sac by suction only.

May one be permitted for a moment to turn to the realm of obstetrics while on this subject.

Probably 90 per cent of all displacements are puerperal in origin, either from labour or miscarriage, and no wonder. The habit of lying on the back is the most unnatural posture to which the human race has become heir through habit only. No other animal sleeps in such a position and certainly no other female would dream of so abusing herself following labour. But our female does it almost invariably and the heavy, soggy uterus, probably hundreds of times its normal weight, with the usual means of support, the pelvic floor, newly stretched, weakened, even injured, has really no alternative than to gradually tumble back against the sacrum. How the very animals must laugh at our utter ignorance of certain fundamentals so well understood by them. Parturient women should begin to lie on their stomachs not later than the fifth day, if there be no complications and continue to lie, and certainly to sleep that way *for the rest of their lives.* It has been frequently said that one of the greatest duties of our young girls' boarding schools should be to teach regularity in bowel hygiene. Get her to form the habit. Let us also teach her to sleep on her right side with the right arm behind her and the left knee drawn up and the body far enough forward that the abdominal organs will be against the front wall of the abdomen where they belong. If all people had a normal bowel movement once or twice a day and slept on their stomachs or nearly so, what a vast improvement there would be in this vale of tears and suffering. An ounce of prevention was ever worth a pound of cure.

Recent literature continually shows the trend toward conservatism in the treatment of fibroids of the uterus. The use of x-ray and radium has unquestionably come to stay, thereby greatly reducing the number of operations for this common trouble.

And so we might go on down the long line of gynæcological diseases. Everywhere men are conserving whenever possible, and so are gynæcologists coming finally into their own true field. For the duty of the gynæcologist fundamentally is to conserve the reproductive function of the female in his community rather than to remove uteri and tubes in large numbers. A gynæcological specialist, I take it, is not a man who can remove a uterus with especially brilliant technique and eclat; many general surgeons can do it just as well. The *gynæcological specialist is he who can tell the general surgeon when not to remove that uterus.*

Some years ago a great political leader in the British Commons drew scathing criticism when in a time of great national emergency he persisted in saying "Wait and see". Emergency in any field permits no such dictum. The science of gynæcology, however, is but seldom in this category. Plenty of time is usually given the specialist to examine the situation from every angle, and the important angle is the essential duty expected by God of this woman while on earth. Surely you interfere with and certainly you eradicate, only as a last resort. To the young gynæcologist the dictum is here offered "Wait and see". Just study the case carefully and *Wait* and *See.* It may be that careful consideration will decide you against the initial decision of surgical interference. For I say to you that he is truly great in gynæcology who knows what *not to do.*

Antipressor Fraction From Liver Tissue and its Physiologic Action.—The clinical results obtained by A. A. James, N. B. Laughton and A. Bruce Macallum, London, Ont., with liver extracts have been gratifying. In some patients, the depression in blood pressure was very gradual, and the lowest point was reached many hours after the injection. In other cases the effect was immediate and persistent. The chemical nature of the depressor substance is unknown. However, the effects of tetra-ethyl-ammonium compounds on the blood pressure in dogs more nearly resembles those obtained by the use of liver extracts than do other known depressor substances. — *Jour. Am. Med. Ass.*, July 31, 1926.

ACUTE ARTHRITIS

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JOINTS are very highly specialized parts of our anatomy. The mobility for which they are primarily designed is an inherent source of weakness. Joints are subject to strain. Those of the lower limb endure weight-bearing stresses as well as stresses due to movement. Little wonder then that arthritis is a common condition.

With the bewildering subject of chronic arthritis, I do not propose to deal on this occasion, but will confine my remarks to the subject of acute lesions of the joints.

From the anatomical point of view, the joint involves a consideration of the ends of the bones forming the joint, of the cartilage which covers the bone ends, of the ligaments which enclose it, and of the synovial membrane which lines the capsule and is in places reflected over part of the bone. In special joints there may be interarticular fibro-cartilages.

In every case of acute arthritis the synovial membrane is involved. In many the cartilage also, and in the severest cases the bone ends themselves may become disorganized. Every case, however, involves synovial membrane. Let us examine in detail the structure. The membrane consists of a layer of delicate connective tissue covered by a layer of epi- or endothelium. In some of the joints it forms large obvious folds as in the alar ligaments of the knee joint. In all joints there are also smaller synovial folds, not usually described in the text-books, and there may be definite fringe-like processes, sometimes bulbous at the extremity, attached at the base by a narrow stalk and containing a quantity of fat. The surface of the synovial membrane itself is covered by delicate villi. This imparts a velvety appearance to the surface, and provides a large area for the balanced secretion and absorption of synovial fluid which is necessary to maintain ideal lubrication. In addition, the velvety surface provides perfect smoothness in joint movement. In each villus there is a blood vessel. Distension of the joint interferes with the free flow of blood through the processes, and any violent sprain of the joint is accompanied by damage to the delicate synovia.

Turning now to the articular cartilage we observe at once the absence of blood channels. Articular cartilage is thus ill equipped to combat infection. Yet it lives and grows. How does it obtain its nourishment?

According to the observations of Shattock and Fisher the peripheral part of the articular cartilage is covered by a delicate extension of the synovial membrane, while the central portion consists at the surface of free cartilage matrix. The peripheral portion derives nourishment from the thin synovial layer, while the central part has no such source of nutrition. The deepest portion of the central part probably obtains nourishment from lymph "exuded from the large and convoluted vessels lying beneath it in the cancellous spaces;" "the superficial stratum is largely nourished by the synovial fluid," within the joint cavity; the remainder of the articular cartilage obtains lymph from the circulus vasculosus, by percolation through a mucinous network in the substance of the cartilage. Toxins, and possibly also bacteria, can thus be carried to the substance of the articular cartilage.

Lacking a free blood supply cartilage is not so readily attacked by organisms, but in the event of injury, traumatic or infective, its power of resistance is correspondingly low.

There are many varieties of acute arthritis which cannot be considered in detail. Acute rheumatism is one of the commonest of these. Gout in former days was also common as the alleged result of a "wet" ancestry. In scarlet fever, in measles, influenza, diphtheria and enteric fever, in cerebro-spinal meningitis, dysentery and Malta fever, arthritis may occur, and I have seen one case of human glanders with acute arthritis of the elbow joint. The

group of cases remaining includes: (1) the traumatic; (2) the infective.

Acute traumatic arthritis is most frequently met with in the knee joint and merits separate consideration. It will not be considered here.

Infective arthritis may result from: (1) A perforating wound. (2) Direct extension from a neighbouring focus. (3) Blood-stream infection either metastatic or part of a general septicæmia.

From another point of view the organisms most frequently responsible for the condition are: the gonococcus; streptococcus; staphylococcus; pneumococcus.

A good deal of experimental work has been done in connection with acute arthritis. McMeans in 1920 reported observations with streptococci. *S. viridans* produced a comparatively mild condition which subsided fairly rapidly leaving behind it a variable grade of disability of the joint. *S. hæmolyticus* produced a much more serious condition. All the stages of acute arthritis were seen from the initial congestion of synovial membrane to distension of the capsule with a creamy, sticky, purulent fluid, smears of which showed the presence of streptococci. From experiments on thirty-four rabbits he concluded that the development of purulent arthritis depends upon the factors which determine the course of infections in general. The physical condition of the animals is very important. A further result of experimental work was the production of arthritis in joints which had been sensitized by the toxins of the streptococcus. Under these conditions intravenous injection of streptococci produced a definite arthritis. The bearing of this observation upon the influence of focal infections is obvious.

Whatever be the source of the infection, the morbid changes in the joint are more or less constant, and correspond to the phenomena of inflammation in other parts. It is important to note that in the early stages the brunt of the attack is borne by the synovial membrane. If the case, therefore, can be handled promptly and efficiently at an early stage of development, the ligaments, the cartilage and the bone may emerge from the attack without a scar. This is the pathological foundation for the Willems method. The synovial membrane becomes congested and enlarged, the blood vessels much dilated. Fluid is poured out into the joint cavity; this is at first serous. Later fibrinous flakes are found in it and finally it becomes frankly purulent. The cells over the surface of the synovial membrane become detached. Fibrin is deposited over the surface and the delicate villi become agglutinated. The organisms become entangled in the fibrinous deposit and some penetrate into the deeper parts of the synovial membrane. Distension of the joint with fluid may become so great as to obliterate the blood vessels in the synovial membrane rendering it pale when seen on opening the joint and diminishing its power of resistance. If the process continues, granulation tissue spreads from the margin of the synovial membrane adjacent to the cartilage, over the surface of the cartilage, and between cartilage and underlying bone. The result of this combined no doubt with direct action of bacterial toxin is that the cartilage becomes injured. Microscopic fragments are detached, or larger flakes may be set free in the joint fluid. Once the cartilage is removed the underlying layer of compact bone is attacked and if this be broken through, invasion of the cancellous spaces, *i.e.*, a progressive osteomyelitis results. Sometimes a purulent arthritis may find its way to the surface, through a weak spot in the capsule or along the course of a blood vessel.

Organisms may pass through the synovial membrane into the deeper tissues. There they may either be destroyed or may form a "periarticular" abscess; thus an abscess may be found in the arm consecutive to an elbow joint infection.

The outlook for the joint function depends entirely on the stage of destruction. If the disease be arrested early the resulting loss of movement may be almost nil. Complete resolution may take place. Whether complete or incomplete, the synovial membrane alone is the sufferer, and the resulting limitation of mobility is the consequence of synovial adhesions only. It may be adhesions of villi to villi, of one fold to another fold, or of synovial membrane to bone. In any case these are often readily snapped, by the bonesetter, if not by the orthodox practitioner, and the joint may be almost as good as before.

If the surface of the cartilage has been injured, a true fibrous ankylosis will result. To rupture such adhesions is a much more formid-

able task, indeed it may be impossible, even under anæsthesia. Intra-articular adhesions are often stronger than bone. Many surgeons of experience have seen a colleague produce a fracture in attempting this measure, and some have even done so themselves. Even if such adhesions are ruptured they are very apt to reform, unless the patient is resolute to ignore the pain of movement. If there be a limited range of movement only, then moving the joint beyond this range may be both painful and dangerous, indeed, may call for operative measures. I have seen a fractured patella, as the result of a slip on the icy pavement, in a knee the seat of fibrous ankylosis. If the actual cancellous bone ends are involved the resulting osteomyelitis may be very troublesome. It may persist for years if incompletely treated. The suppurative process may form a long sinuous track which it is almost impossible to obliterate satisfactorily. Such cases heal up at times, then as the result of a local strain or general depreciation of vitality, they "flare up" causing much annoyance, pain and disability. In any case involvement of the bone ends means osseous ankylosis.

The acute process may thus resolve: it may end in destruction of the joint. There is a third termination, *viz.*, it may become subacute or chronic. These are the cases which form a standing reproach to us. We call them polyarthritis, rheumatoid arthritis. In children we speak of Still's disease. These joints show a destructive process corresponding to a low grade infection. The patients have pain and fever, and from time to time acute exacerbations occur, now in one joint, now in another. We believe them to be metastatic in origin, and teeth are extracted, tonsils enucleated, appendices removed, gall bladders excised, sinuses drained, the prostate is massaged, the cervix is amputated, indeed multiple locks are affixed to the stable door—after the steed is stolen. Culture of the joint exudate is fruitless, excision of synovial membrane is of histological interest but offers no therapeutic aid. Months and years go on. An occasional brilliant result follows injections of paratyphoid vaccine, Witte's peptone, or whole milk, and the enthusiast is led to publish his opinion that "non-specific proteins introduced intra-venously are specific for acute infectious arthritis." But still these cases linger on without our being able to modify their course to any great extent. Sometimes they "burn themselves out" and the orthopædic surgeon finds a field for joint excision or arthrodesis, but up to the present, the disease itself eludes our control. The difficulty is that even after removal of the primary focus, there may be many secondary foci, and we do not know where they are.

Acting on the suggestion that the responsible organisms might be present in lymphatic glands, in a number of cases the adjacent lymph nodes have been excised and cultures made from them. Very frequently a streptococcus can be grown from these, and can even be seen in large numbers in simple smears. The results of injection of vaccines prepared from these streptococci have not been very encouraging, and it remains to be seen whether more favourable views can be entertained after trial of an autogenous serum. So far as I am aware no observations along this line of work have been published.

The Various Types of Infection

Gonococcal.—In the majority of cases, the urethra is the site of the original disease. During or after the third week arthritis may appear; the frequency is stated to be one case in forty-five. The virulence of the original attack does not determine the onset of arthritis. Often one joint only is attacked, the most frequent being the knee, the smaller joints such as the chondro-sternal, the manubrio-gladiolar, the temporo-mandibular, the superior tibio-fibular are not immune. The fluid is usually sterile though gonococci are occasionally found. The effusion may be considerable in amount. Muscular atrophy may be early and marked. Suppuration is distinctly rare. Periarticular swelling is often pronounced. If the joint fluid be examined periodically an increase in the mononuclears may be found to coincide with improvement of the joint condition while an increase in polymorphs suggests a new attack.

Gonococcal arthritis is found in infants associated with ophthalmia. De Bella reports a case in a new born infant where pain and swelling of the joints of the hand occurred on the eleventh day and in the ankles two days later. Other joints were also affected, but the disease subsided by the twentieth day. He regards the prognosis as good. It is sometimes difficult, in the absence of definite urethral infection to be

sure of the gonococcal nature of the arthritis. Interest, therefore attaches to a complement fixation test. One such, using an antigen from an emulsion of at least six strains of the organism gave a negative reaction in fourteen subjects with non-gonorrhœal rheumatism. Out of twenty-four other cases, the reaction was positive in 87.5 per cent.

One of the difficulties of clearing up a case of gonococcal arthritis is that the cocci are apt to persist in the substance of the prostate or the cavity of the seminal vesicles. As long as these foci remain infective, a permanent cure is impossible.

The prognosis in the majority of cases is good. The greater number subside with appropriate treatment leaving, it may be, a few adhesions which are readily broken down. There is, however, no variety of acute arthritis which offers to the surgeon such an array of possible methods of treatment, a fairly trustworthy sign that no one of them is infallible. Some of these after a solitary flutter as "preliminary reports" die from inherent lack of the right to live. Others strut a brief hour upon the stage bearing their eight, ten or twelve brilliant cures, and then, meteor-like, vanish. Vaccines still court observation, though few dramatic cures are now claimed for them. Sometimes they are autogenous gonococcal vaccines; sometimes, as Michel writes, "treatment with paratyphoid vaccine has become almost a routine procedure."

Others following Dufour, claim equally striking results for autosero-therapy, *i.e.*, injection of the fluid obtained by puncture of the diseased joint. This is commended for its "efficacy, prompt action, and harmlessness." Ten to twenty c.c. of this fluid are injected subcutaneously as often as aspiration of the joint is necessary. It makes no difference whether the fluid contains pus or gonococci, or neither. The result is always the same, cure in four to thirty days. In France, of late, the fashion has veered to the use of a serum given intra-articularly or extra-articularly. Typical of these is the Sterian serum prepared not only from the gonococci but also "with the entire flora of associated bacteria present in urethral pus and their biochemical products." Merklen and Minvielle reported improvement after the first injection, and normal joint movements in ten days. The cure was complete after five injections, two or three days apart. Sterian himself recorded sixty-three cases of arthritis of which fifty-five were cured and eight were checked.

Ramond, Janet and Levy enlist the services of lipiodol. After aspiration and lavage of the joint with a 2 per cent solution of sodium citrate, the joint is injected with sterilized air sufficient to distend all the culs-de-sac. Immediately afterwards they injected 10 to 20 c.c. of lipiodol repeating this three to five days later. At the same time there must be "mechanical and passive movement of the joint whatever be the pain to the patient." Three cases stand behind this record.

Recognizing that the focus of infection is usually in the seminal vesicles, Stellwagen employs an isotonic watery solution of iodine injected directly into the vesicles through the rectal mucosa. Three c.c. of this are injected slowly, no anæsthetic being necessary. In acute cases the results are excellent, in subacute cases, less gratifying.

It is evident that no special method of treatment for gonococcic arthritis is yet able to meet all comers.

Pneumococcal arthritis.—This is one of the milder types, the effusion remaining serous for a considerable time. In children the condition may be apparently "primary." In adults it is almost always associated with an attack of pneumonia. The disease is always a blood-borne infection and may vary in severity from a comparatively mild arthritis to a septicæmia. In a case recorded by Davies a child of five, suffered from an attack of broncho-pneumonia after measles. This was followed by a purulent arthritis of the hip with peri-articular abscess and later on by peritonitis which terminated by the bursting of the pus through the umbilicus. Pneumococci were found in the pus from both peritoneum and hip.

Plisson and Brousse compiled 185 cases of pneumococcal arthritis. In twenty-six cases it was apparently primary, fourteen of these were in children. Froelich recorded a case after pneumonia in which the heads of both femora were "spontaneously eliminated," resulting in bilateral dislocation of the hip-joint.

The treatment of the condition should follow general lines.

Staphylococcal arthritis.—Is always a very serious condition. Pus is formed at an early

stage and the cartilage and bone are quickly invaded. Infection may occur after a perforating wound of the joint particularly with the presence of a foreign body. It may spread from a neighbouring epiphysitis or osteomyelitis. I have seen it after operative interference with a Brodie's abscess, or it may follow an apparently trivial boil or abrasion. Some of these cases are almost fulminating in character, as one recorded by Steward where amputation was performed in a child for an acute staphylococcal infection of the elbow joint secondary to bone infection. Others recover completely. Farr records three cases all with staphylococcal infection where there was a perfect range of movement and painless weight bearing after forty days.

There is no variety of acute arthritis which demands more prompt and thorough treatment than the staphylococcal form.

Streptococcal arthritis.—This variety of arthritis has loomed more largely in the public eye of late years. It is essentially the form commonly referred to as metastatic arthritis. In the human subject, the offending organism is frequently the streptococcus hæmolyticus. For its identification the use of a complement fixation test has been recommended.

The following is a typical case: J.N., aged twenty-eight, was admitted to hospital with an acute mastoiditis. The following day the left knee joint and right shoulder became swollen and painful. The mastoid was opened and progressed favourably, but the temperature only subsided slowly after repeated aspiration of the joints. From the mastoid and the joint fluid, the streptococcus hæmolyticus was isolated. Adhesions formed in both joints, were broken down without much trouble, and almost complete recovery of function was obtained.

In all the varieties of arthritis we have reviewed, a factor of much importance regarding prognosis is the potential development of a general blood infection, leading to endocarditis or to metastatic abscesses in the lungs, liver or kidneys. Provided the infection be limited to the joint itself, the outlook as regards function may be at times depressing, but the patient usually recovers. With the appearance of metastatic abscesses, the prognosis is very much graver, these frequently manifesting themselves as terminal phenomena.

Treatment.—The first essential is to gain as much information as possible about the effusion into the joint. Aspiration of the joint and examination of the fluid are therefore essential. This should include inspection of its character as serous or purulent, and cytological and bacteriological investigation. Upon our findings, treatment will be based.

Pneumococcal arthritis justifies fairly prolonged conservative measures. A negative culture may suggest more thorough examination of the lower genital tract. Staphylococcal infection usually demands prompt action and streptococci in culture means that the lesion is a serious one.

What are the principles of treatment? As demonstrated by McMeans in his experiments on rabbits, the general condition has much to do with the fight against infection, hence the best possible conditions should be secured. These include fresh air, sunshine, nutritious, easily digested food and general tonics. The next principle is that an acutely inflamed part needs rest, hence splinting of the joint is advisable. Sometimes traction is employed to assist in overcoming muscle spasm as may be effected by the use of a Thomas splint for the knee joint. But there is a certain incompatibility between splinting and traction on the one hand, and on the other hand the early movement which is essential for preventing the formation of adhesions. This is one of the occasions where surgical judgment—the essence of the good surgeon—is absolutely necessary. Too early or too vigorous movement may intensify the arthritis; undue delay may lead to adhesions which cause marked disability. If we wait until all the effusion has disappeared, and all heat and redness have vanished, we have waited too long; on the other hand, too early or too enthusiastic movement may cause an acute flare-up and a consequent net loss of time in recovery. One consideration helps. What movement the patient can carry out actively is practically always of benefit. If after passive movement the general or local condition is worse, there is nothing for it but another spell of rest. Movement should never be carried out if the bone ends are involved.

A third aim is to limit the pathological process if possible to the synovial membrane. By this means the loss of function is likely to be reduced.

A fourth aim is to keep the joint as free as

possible from tension and from the presence of bacteria and their toxins.

How can we apply these principles to the individual case? If the infection is comparatively mild, the joint effusion serous, and the constitutional symptoms not severe, aspiration, repeated if necessary, may suffice to bring the temperature down and cause the arthritis to subside. If that be not enough, aspiration may be combined with thorough lavage of the joint. If the effusion be capable of passing through a cannula, this is satisfactory. Probably flushing of the joint with normal saline is as efficient as flushing with antiseptic solutions. Most men, however, prefer a mild antiseptic such as 1 in 4,000 biniodide of mercury (Steward) or 1 in 15,000 corrosive sublimate (Cotton). Weak iodine solution is also employed. If the exudate is too fibrinous or too flaky to pass through a cannula, the joint should be opened, flushed out completely, and sewn up tight. This will bring about a cessation of the arthritis in a certain proportion of cases. If the general symptoms continue and the effusion remains purulent, we have still a right to aim at a fair degree of mobility if the method demonstrated by Williams is employed as he employed it. Before discussing it in detail, another question has to be considered. Is it of value to inject antiseptics into joints? The answer is definitely negative.

Weak antiseptics are valueless and strong antiseptics are harmful. Axhausen and Frosch after experiments on fifty rabbits warned against the injection of strong antiseptics into joints. Few surgeons nowadays use the 2 per cent solution of formalin in glycerin advocated by Murphy.

Mechanical cleansing to assist the effusion of lymph containing antibodies is much the better way. Bier's congestion is somewhat under a cloud these days, but many still regard it as a measure of value.

To Willems, however, belongs the credit of the boldest and most successful method of dealing with acute purulent arthritis. He aims not merely at preserving mobility of the joint but also preventing atrophy of the muscles. In purulent arthritis the wound is left widely open and "active immediate mobilization" is instituted. The movements must be active, not passive; only thus is the synovial sac everywhere compressed, and the muscles prevented from wasting. It must be immediate, commenced as soon as the patient awakens from the anæsthetic. "The patient must not be permitted to rest. The movements must be pushed to the maximum and must be kept up uninterruptedly. It requires from the patient an effort that he will only make if kept at it all the time. He therefore needs supervision." No lavage of the joint is necessary. Though laborious, the treatment is not really painful unless there is some retention, and the remedy for that is wider arthrotomy and more movement. A small amount of retention is sufficient to cause much pain. In civil practice opportunities for use of this method are limited, but war experience abundantly proved its value. Usland described a case of purulent streptococcic infection in a boy of ten with the happiest results, even though the method was not enforced with the rigour postulated by Willems.

From the dawn of medical science there has persisted a search for a *therapia sterilisans magna* which should render surgery unnecessary in infective conditions. It is refreshing in these sophisticated times to read of a German who has devised a mixture containing ammonium carbonate, anisated spirit of ammonia, syrup and water, which is of value in streptococcal infections provided a tablespoonful be exhibited every two or four hours. No doubt he derives as much satisfaction from this olfactory preparation as do the sponsors of the tinctorial weapons known as gentian violet and mercurochrome. It is probable that organisms circulating in the blood-stream are never killed by these reagents. Indeed, according to Gatch, Trusler and Owen, "a large dose in the presence of an overwhelming infection may hasten death." Up till the present, hope of success in the treatment of acute arthritis lies with the method of direct attack along the lines indicated in this paper.

THE LOW FUNCTION KIDNEY*

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THE urologist, not infrequently, is confronted with that type of case presenting a markedly lowered renal function. Such cases tax the resources, the ingenuity, and particularly the judgment of the urological surgeon, and are always a matter of much concern, sometimes of deep anxiety. Just such cases have been brought together here in a series with the idea of facing the facts fully, frankly and honestly, in order to ascertain the types of cases most often affected, how profoundly, and what we can and cannot do for their relief. For the purposes of this paper only such cases as have exhibited a phenolsulphonephthalein functional test of 40 per cent or under have been included.

Over a period of eight years, six thousand cases were admitted to the department of urology, of the Royal Victoria Hospital and approximately 6 per cent or 361 cases showed a renal function so distinctly lowered.

Age and sex play some rôle in the series studied. The average age was fifty-one years, indicating that the most frequent lesions are those affecting late middle life. The oldest patient was a man ninety-one years old, suffering with prostatism; the youngest a girl aged ten years, with chronic nephritis. No age is immune from renal insufficiency.

Males form the bulk of the material studied (78 per cent); doubtless due to the fact that they are more subject to obstructive diseases of the lower urinary tract. Females on the other hand show a predominance of lesions involving the upper urinary tract as a cause of an impaired renal function; only 12 per cent showing lesions of the lower tract.

The lesions found in the series were predominantly those of the lower urinary tract (64 per cent) and made up principally by prostatism, ureteral calculi, stricture of the urethra and carcinoma of the prostate. The upper tract lesions were chiefly pyonephrosis, renal tuberculosis, pyelitis and nephrolithiasis. The medical nephritides, both acute and chronic, with those conditions simulating them, the so-called congenital cystic kidneys, form an appreciable group of the upper tract lesions. Infection accompanied the majority of these. All the lower tract lesions were of the surgical type, although not all were operated on.

The symptoms complained of were those usually found in urological cases of the types enumerated: frequency, dysuria, hæmaturia, difficulty in voiding, retention and pain. Pain is the second most prominent symptom after frequency, and more than one-half of those complaining of this symptom had the pain localized in one or both loins. Other symptoms such as headache, weakness, nausea and vomiting, œdema of the legs, etc., form a small percentage of the symptomatology.

The onset of the symptoms varied from a few hours as the shortest period, occurring in cases of ureteral colic, to thirty-eight years as the longest time elapsing before seeking hospital care. The average length of time from onset of symptoms to admission to hospital was four years.

The urinary findings show an average specific gravity of 1.014. In view of the low renal function exhibited by all the cases this may be considered a moderate average being but four points below the accepted normal standard of 1.018. The lowest reading was 1.003, the highest 1.034 occurring in a case showing sugar as well. Less than one-fifth (18.8 per cent) gave a specific gravity reading of 1.010 or less. Ninety-six per cent showed the presence of albumin varying in amount from traces to as high as 6.5 grammes per litre. Those cases where the albumin was able to be estimated by the albuminometer were found to be in the medical nephritides, usually with a superimposed infection as well. Only 4.3 per cent of the cases showed no pathological cellular elements: over 88 per cent showing pus: 24 per

* Read at the meeting of American Urological Association, Boston, May, 1926.

cent blood; and 9 per cent casts of some sort. Almost eight-tenths (77.3 per cent) of the cases showed a reduction in renal function to between 20 and 40 per cent, with more than one-half between 30 and 40 per cent. With a reduction to one-half or less of the normal renal functional output in all the cases studied one might expect a corresponding retention of the nitrogenous elements, and an increase of the creatinine in the blood, but such is not the findings in the series. More than one-fourth (26.6 per cent) showed changes in the blood urea nitrogen products up to the upper limits of normal only. One-quarter of the cases showed a marked retention of both urea and creatinine, the majority being found in those cases also showing a phthalein output of less than 20 per cent.

TABLE I

Number of cases in series—361.
Diagnosis—Types of cases:

I. Upper Tract Lesions:	
Pyonephrosis	7.7%
Nephritis	6.9%
Renal tuberculosis	5.6%
Pyelitis	4.6%
Nephrolithiasis	4.4%
Hydronephrosis, infected	2.4%
Congenital cystic kidney	1.4%
Carcinoma of kidney	1.4%
Pyelonephritis	1.4%
Acute arsenical toxæmia	0.2%
II. Lower Tract Lesions:	
Ureter	
Calculus, ureteral	8.3%
Bladder:	
Calculus, vesical	3.5%
Calculus, vesical with prostatism	2.7%
Carcinoma of bladder	3.3%
Papilloma of bladder	1.9%
Foreign body in bladder	0.2%
Cystitis	1.1%
Pessary causing vesico-vaginal cavity	0.2%
Prostate:	
Prostatism	26.7%
Carcinoma of prostate	6.6%
Prostatic obstruction	1.9%
Urethra:	
Carcinoma of urethra	0.5%
Stricture of urethra	7.4%

TABLE II

Symptoms complained of:	
Frequency	72.5%
Pain	48.1%
Dysuria	36.0%
Hæmaturia	26.0%
Difficulty in voiding	18.2%
Retention	13.2%
Incontinence	9.9%
Other symptoms:	
Headache, nausea, vomiting, etc	5.8%

TABLE III

Specific Gravity

Lowest	*Highest*	*Average*	*Below 1.010*
1.003	1.034	1.014	72 or 18.8%

Albumin: 96% varying from traces to 6.5 grammes per litre

Albumin and pus	63.6%
Albumin, pus and blood	18.5%
Albumin, pus, blood and casts	6.0%
Albumin and blood	3.3%
Albumin, blood and casts	0.8%
Albumin and casts	2 7%
Albumin only	0.5%
No albumin, pus, blood or casts	3.8%

TABLE VI

Cases showing Phenolsulphonephthalein of 20% or under:

Number of cases 82 or 22.3 per cent of the series.

Upper tract lesions		42%
Lower tract lesions		58%
Cases operated		36%
Results in this group:	Cured	11%
	Improved	38%
	Not improved	28%
	Dies	23%

An estimation of renal impairment by the phenolsulphonephthalein test, and a simultaneous examination of the retention of the nitrogenous products and creatinine in the blood gave in the more pronounced and permanent impairments parallel findings.

In order that one might not be judging the low function kidney by one test only, one member of our staff (A. B. Hawthorne) undertook the investigation of the various renal function tests as to their relative merits. The phenolsulphonephthalein test, the urea concentration test and the urea concentration factor as evolved by Patch and Rabinowitch were done concurrently on a series of 120 cases:

TABLE V

PSP.	*Average urea nitrogen*	*Average creatinine*	*Average urea concentration*	*Average urea concentration*
0—20%	71.12 mgm.	3.57 mgm.	0.048	0.26
20—30%	45.08 "	2.13 "	1.6	7.9
30—40%	22.70 "	1.29 "	.815	8.06
40—50%	20.31	1.36 "	.....	26.00
50—60%	19.04 "	1.28 "	1.89	29.6
60—70%	18.08	1.34 "	2.11	32.19
70%	14.61 "	1.99 "	2.58	42.5
Normal, 75—80%	12—15 mgm.	1—1, 1—5 mgm	2—2.5	41.0

It is apparent in this small series that as the phthalein output rose the retention of nitrogenous products gradually and uniformly fell, the concentration and the concentration factor improved. ..

The phthalein we found the simplest test and on the whole gives as much information as any one individual test. It apparently parallels the other tests in all classes of impairment, grave, moderate or slight.

The urea concentration test is of value when considered with the other functional tests.

The retention of nitrogenous material in the blood has several extra renal factors which complicate the picture and have to be ruled out before the figures can be accepted. These are cardiac disease, pleurisy, infections, peritonitis, obstruction, etc. Creatinine is not influenced as quickly as the blood urea for only 56 per cent of the cases showed a retention above normal; whereas over seventy per cent showed blood urea retention above the normal limits. The creatinine content of the blood appears to be unchanged until the renal impairment is quite advanced and more or less permanent. Any marked degree of creatinine retention is frequently a sign for a guarded prognosis, particularly if the amount remains fixed.

The urea concentration factor seems to be the most sensitive test in the estimation of the impairment of the renal function. The ideal, of course, is to have a combination of all the tests.

Of exceptional interest is that group of cases showing renal impairment to below 20 per cent. In this group there are eighty-two cases or 22.3 per cent of the series. Here we find lesions of the upper and lower tracts about equally present. Those of the upper are made up mainly by the non-surgical affections; chronic nephritis, congenital cystic kidney, and acute and chronic pyelonephritis; while those of the lower are entirely obstructive, and usually surgical. Surgery in this group was a matter of necessity, rather than of choice, and was confined entirely to the relief of obstructive lesions of the lower tract. Thirty-six per cent required some form of drainage either suprapubic or perineal.

As marked and grave as the renal changes in this group apparently were, the results obtained were not altogether unsatisfactory as 49 per cent were either cured or improved, 28 per cent were not improved; there were fourteen deaths, making a mortality rate of 23 per cent for the group. Nearly one-half of all the deaths of the series occurred in this group.

TABLE IV

Phenolsulphonephthalein and Blood Chemistry Findings

	Phenolsulphonethalein	*Blood urea and creatinine upper limit of normal*	*Blood urea raised little above normal creatinine normal*	*Blood urea creatinine raised 1½ to twice normal*	*Blood urea creatinine raised 2–5 times normal*
Less than 10%.....	10.8%	.....	21.0%	2.7%	15.4%
10—20%.....	11.9%	0.7%	2.8%	2.1%	4.9%
20—30%.....	24.1%	7.0%	4.9%	13.4%	4.9%
30—40%.....	53.2%	19.9%	7.6%	11.2%	1.4%
Totals.....	100%	26.6%	17.4%	29.4%	26.6%

TABLE VII

Number of cases in series showing improvement in phenolsulphonephthalein—134 or 37.0%

	Improvement					*Operation*	*No operation Dilatation, etc.*
	10%	20%	30%	40%	50%		
Lesions of upper tract 17.2%....	4%	9%	3%	...	...	10%	15%
Lesions of lower tract 82.8%....	17%	38%	21%	6%	2%	49%	26%

When, however, considered in relation to the whole series the mortality rate is only 3.86 per cent.

Thirty-seven per cent or 134 cases in the series, admitted with a distinct impairment of the renal function, showed on discharge an improvement in function varying from 10 to 50 per cent. Lower tract lesions form the major portion of this group, and showed the most pronounced impairment, more than 60 per cent giving an average improvement of between 20 and 30 per cent.

All of the group had some manipulative procedure, ureteral drainage or dilatation, urethral dilatation, or operation of some sort either for a lower or upper tract lesion. Establishment of proper drainage invariably brought relief and improvement.

In the series we were struck by the number of cases of ureteral calculus (thirty or 8.5 per cent) giving a low renal functional output. Perhaps this can be accounted for by the accompanying colic, the obstruction, the nausea and vomiting and the lack of forcing fluids prior to admission. Improvement however is usually quite rapid and permanent, once proper drainage is instituted.

As Table VIII indicates, an appreciable per-

TABLE VIII

Operative cases numbered 158 or 40.8%.

Types of operation	*Anæsthetic*		*Renal function, PSP.*				*Result*		
	Genl.	*Local*	0—10%	10—20%	20—30%	30—40%	*Cured*	*Impr'd*	*Died*
Suprapubic prostatectomy...48% " cystotomy.....31% Nephrectomy.....10% Perineal section.....5% Ureterotomy.....5% Pyelotomy..... Perineal prostatectomy.....1% Plastic on renal pelvis.....	24%	76%	5%	12%	19%	64%	4%	18%	8%

TABLE IX

UPPER TRACT LESIONS

Deaths in the series: 30 or 8.3%.
Upper tract lesions: 10

Diagnosis	*Average P.S.P.*	*Average urea nitrogen*	*Average creatinine*	*Operation*
Pyonephrosis.....3	23%	47.48 mgm. per 100 c.c.	2.72 mgm. per 100 c.c.	Nephrectomy—2
Chronic interstitial nephritis.....3	5%	94.84 " " " "	3.35 " " " "	
Carcinoma of kidney with metastasis.....1	37%			
Nephrolithiasis, bilateral...1	40%	34.36 " " " "	2.44 " " " "	Nephrectomy
Congenital cystic kidney...1	16%	59.74 " " " "	4.09 " " " "	
Pyelonephritis, bilateral....1	5%	91.0 " " " "	6.82 " " " "	
Aggregate average.....	21%	65.48 " " " "	3.88 " " " "	

LOWER TRACT LESIONS

Lower Tract Lesions: 20

Diagnosis	*Average P.S.P.*	*Average urea nitrogen*	*Average creatinine*	*Operation*
Prostatism.....9	22%	27.0 mgm. per 100 c.c.	3.66 mgm. per 100 c.c.	Suprapubic cystotomy..... 7
Carcinoma of bladder.....3	13%	55.26 " " " "	2.82 " " " "	" " 1
Carcinoma of prostate.....3	17%	46.90 " " " "	3.12 " " " "	" " 2
Periurethral abscess with extravasation.....3	17%	31.96 " " " "	2.12 " " " "	Perineal section.2
Vesical calculus.....2	26%	42.58 " " " "	1.50 " " " "	Suprapubic cystotomy..... 2
Aggregate average.....	19%	40.70 " " " "	2.64 " " " "	

centage (40.8) were subjected to operative interference. The surgery for the most part took the form of relief of obstruction, and the institution of proper drainage of the lower tract. Upper tract surgery-nephrectomy, pyelotomy, ureterotomy and any plastic procedure was permissible in less than one-fifth of the operable cases.

Due to the inherent nature of the lesions, and perhaps to the fact that local and regional anæsthesia of the upper tract has a less broad field of application, severe and usually bilateral lesions of the upper tract are less amenable to surgery. The operative risk in the majority of cases was only fair and in 17 per cent was distinctly poor. The results were gratifying considering that we had to deal with cases showing decided and at times marked impairment of the renal function. An overwhelming majority of the cases were brought to a state of comfort or usefulness; 92 per cent being either cured or improved. The operative mortality was only 8 per cent.

The deaths numbered 30, or 8.3 per cent of all cases. It will be seen that all of the fatal cases showed severe kidney damage. The aggregate average phthalein test for the upper lesions was 21 per cent, and for those with lower lesions 19 per cent; yet the upper lesions presented higher urea nitrogen and creatinine retention; about three or four times the normal limit. The lower lesions presented retention of about twice the normal amount.

The nephritides and those lesions resembling them gave the highest degree of retention. Seventeen or over half of the cases were operated on principally to establish drainage.

Results in relation to the entire series.—The results in the whole series need no comment. Nearly eight-tenths were benefitted, at least to some extent, and that we feel is gratifying when one considers the real kidney damage the series exhibited. The mortality rate was 8.3 per cent.

Cured	39.8%
Improved	39.8%
Not improved	9.1%
Not treated	3.0%
Died	8.3%

Summary

A series of 361 cases all showing a renal functional output of 40 per cent or less, estimated by the phenolsulphonephthalein test, was studied.

The lesions found were both of the upper and lower urinary tract with predominance in the lower tract, usually of the obstructive type.

The urinary findings were not striking, except that practically all of the series showed some pathological cellular elements. The average specific gravity remained at the slightly lowered reading of 1.014.

Phenolsulphonephthalein estimation and blood chemistry findings of renal function gave for the most part parallel findings, especially in the more severe degrees of renal impairment. Creatinine was found to be influenced less early than blood urea and urea nitrogen.

One fifth of the cases showed marked lowering of functional output to below 20 per cent. In this group are found nearly one-half of the deaths in the series. Over one-third of the series upon institution of proper drainage and relief of obstruction, whether upper or lower lesion, showed decided and in some instances rapid improvement in the renal functional output.

Surgical procedure, mainly to establish or improve drainage and to relieve obstruction, was necessary in about one-half the series. The results were encouraging. The deaths occurred in extreme cases with markedly lowered phthalein output and severe degrees of blood retention products.

Conclusions

1. Decided and marked renal impairment is a finding so frequent in urological practice as to constitute a serious problem.

2. Lower urinary tract lesions of the obstructive type are responsible for the majority of cases showing marked impairment.

3. Renal impairment due to lower obstructive lesions is, even in severe degrees usually only relative; while that due to upper tract lesions is intrinsic and actual.

4. The phenolsulphonephthalein test and others like it are for clinical purposes simple and quite efficient.

5. Operative procedure in the presence of marked renal impairment is frequently imperative, and often more safe than the functional output indicates.

XUM

MEDICAL ASPECTS OF DUODENAL ULCER*

By Herbert C. Moffitt

San Francisco

CONTROVERSY, which in the past has not always been diplomatic, has cleared the atmosphere and both surgeon and internist now see plainly the main problems of ulcer from a common view-point. Certain factors in etiology, certain phases of physiology and pathology still remain obscure, but our knowledge, particularly in regard to duodenal ulcer, has been greatly enhanced in recent years by the work of surgeons, and more definite conclusions as to course, symptomatology and treatment may now be formulated.

Etiology.—Experimentally ulcers may be produced in most varied ways: by mechanical, chemical or thermic irritation, by resection of vagi or splanchnics, of adrenals or parathyroids, by local or intravenous injection of chemicals, bacteria or bacterial or metabolic toxins. As Cohnheim long ago observed it is less difficult to understand why an ulcer forms, than to determine why certain ulcers do not heal. Normally the mucosa of stomach and duodenum is extraordinarily resistant to mechanical insult and repair of accidental or surgical damage is prompt and thorough. Witness the impunity with which the average civilized individual experiments with his digestion, bolting all kinds of food, at all temperatures, mixed with all kinds of irritants, containing all kinds of bacteria; witness also the experiments of the insane, and the circus freak with nails, glass, pins and cutlery. Undoubtedly many ulcers in man heal promptly without symptoms. The formation of the chronic "clinical" ulcer implies definite injury to the cells of the mucosa and the action of certain forces inhibiting repair of the damaged tissues.

Circulation.—Since the publication of Virchow's paper in 1855 much stress has been laid upon disturbances of blood supply, brought about by embolism or thrombosis, by arteriosclerosis or by angiospasm, the result of disturbed vagus or sympathetic innervation. Ischemia due to excessive and persistent local muscle spasm may play a certain part. Reeves has shown that a triangular blood supply of the first part of the duodenum predisposes to thrombosis. In the days of chlorosis, general anæmia was imputed an important rôle; it not infrequently results from hæmorrhage in duodenal ulcer and may be a factor in delayed healing.

Infection.—The profound influence on the digestive mucous membrane of toxins or bacteria reaching it by way of the blood stream, has been proved conclusively by experimental and clinical evidence in recent years. Dieulafoy first drew attention to the importance of bacterial embolism in the production of hæmorrhagic erosions or superficial ulcerations—his *exulceratio simplex.* The work of Billings and Rosenow is known to all. Clinicians have long been familiar with the fact that symptoms of ulcer may develop soon after an acute infectious disease, after tonsillitis, appendicitis or cholecystitis. Bohan and Hayden as well as others have noted the increase of ulcer since the last influenza epidemic, and have seen exacerbations of symptoms follow respiratory infections, extraction of teeth and abdominal operations. They have produced duodenal ulcer in animals by intravenous injection of cultures from tonsils or alveolar abscesses of ulcer patients. Rosenow has in many publications dilated upon the importance of streptococcal infection: "streptococci irrespective of their source, when of a certain grade of virulence, exhibit affinity for the gastric mucous membrane. When injected intravenously ulcer of the stomach or duodenum may follow." Later experiments would show greater specificity of cultures from human ulcers or from tonsils or alveolar abscesses of ulcer cases. The toxin of streptococci apparently sensitizes the stomach and duodenal

* A contribution to a Symposium on Duodenal Ulcer given before the Canadian Medical Association at the annual meeting in Victoria, June, 1926.

mucosa to infection with streptococci. The reports of Hoffman and others would show that this may be true for other bacteria as well. This may explain the re-awakening of symptoms from distant foci or intercurrent infections—a type of abdominal allergy. Rosenow has found streptococci in the chronic ulcers produced experimentally by Mann and Williamson, and has had encouraging results in their prevention from certain methods of immunization. Surface infection probably rarely occurs. Bitter and Loehr in forty cases of duodenal ulcer found duodenal contents sterile in 95 per cent and stomach contents sterile in 35 per cent. Few bacteria are found in chronic ulcer but they may well be a factor in delayed repair.

Influence of diet, habits, mode of life.—From present clinical evidence, infection and disturbances of circulation may safely be regarded as the most direct agents in the injury of duodenal muscularis and mucosa which precedes ulcer formation. If the damage is extensive necrosis of tissues may occur; if injury is slight the cells may recover; if more severe they are unable to resist the mechanical and chemical processes of digestion and ulcer results. Many forces may inhibit healing. Fatigue, exposure to cold, long continued nervous strain and worry, chronic infection, and bad habits may lower general resistance. Experimental ulcers heal more slowly in badly fed or anæmic dogs. Malnutrition plays a big part in the production of duodenal ulcers in infants. Mechanical irritation of coarse and poorly masticated food may affect an ulcerative area although it may not damage a normal mucosa. Beaumont's observations on Alexis St. Martin showed that hyperæmia and excessive mucus production followed ingestion of irritating foods or alcohol. Pierson has recorded seven cases of ulcer developing in stalwart hard-working men in Alaska who had long been on excessive coarse diets with preponderance of meat and lack of vegetables. Symptoms disappeared quickly on changing to a more rational diet. McCarrison noted the development of both gastric and duodenal ulcers in monkeys and guinea-pigs fed on diets deficient in vitamins. He records the interesting observation that men are more subject to nutritional diseases. He concludes perhaps too hastily that the freedom of native Himalayans from ulcer, appendicitis and cholecystitis is referable to their well-balanced diet. It could equally well be attributed to their freedom from infections, and from the nervous wear and tear of modern urban life.

We are still ignorant of many facts in the physiology of digestion and in the pathology of abdominal disease. Despite much experimental and clinical evidence, the nature of visceral pain and the rôle of intrinsic or extrinsic reflex action in the production of local or distant motor phenomena are yet unexplained. In the light of our present knowledge we can do no more than speculate, therefore, upon the influence of disturbed rhythms in peristalsis, or of local muscle spasm, or of the action of the vegetative nervous system either in the direct production of ulcer, or in the prevention of its healing.

Corrosion.—Although ulcer may be formed and may persist with absence of free acid or even with achylia, it has been recognized since the time of Celsus that peptic digestion plays a big part in keeping active the so-called "chronic or clinical ulcer". "Typical ulcer develops only in parts over which acid secretion pours" (Mann). "Only within this neutralizing field of the duodenum can an ulcer occur" (W. H. Mayo). Mann and Williamson were able to produce chronic ulcer in dogs by diverting the alkaline duodenal secretion in various ways. If protected from acid irritation healing was rapid and complete. The recent investigations of Rehfuss, Carlson, McClure, Ivy and others have considerably modified our views of gastric and duodenal secretion. Carlson states that "actual hyperacidity in the sense of a gastric juice of greater than normal acidity has not been demonstrated in any disease and probably does not exist." He is doubtful that excision of the pyloric portion of the stomach depresses the function of the fundus glands. McClure calls attention to the large amounts of duodenal secretion and its importance in neutralization of gastric acidity. Monserrat would refer the climbing acid curve of duodenal ulcer and gastric retention to the failure of neutralization by the duodenal secretion. The excellent results of gastroenterostomy in most cases of duodenal ulcer have been attributed by Patterson, Sherren, Moynihan, W. H. Mayo and many others to the reduction

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in the amount of free hydrochloric acid, to the shorter time of contact of the duodenal ulcer area with the acid gastric juice and the more rapid neutralization of acidity by the duodenal secretion. Sippy's important researches on the control of acidity in the treatment of ulcer will be dealt with later. Many investigations on the effect of disturbances of acid-base balance of the blood and tissues are now in progress. Their bearing on production, symptomatology and therapy of chronic ulcer has been stressed recently by Bálint, Straub and Szirmay.

Pathology.—C. H. Mayo maintains that "ulcer occurs in all climates with all types of food and in all races." McCarrison and others would differ with him. The bad reactions of isolated communities to infections, diet and living habits of our modern centres of civilization were seen in our own country in mobilization of the War. In recent conversations with men at the head of large surgical clinics in the Philippines, China and Egypt, the low incidence of ulcer, appendicitis and cholecystitis in the natives has been strongly emphasized; this in despite of intestinal parasitism of all kinds. When, however, the natives adopt diet and "jazz" modes of living of their more civilized white fellows, abdominal disease develops quickly. It cannot be a change in anatomical structure, it must be the effect of disturbed function due possibly to different types of infection, possibly to certain breaks in the usual physiological rhythm of digestion by altered nervous function. Old statistics are of no value in studying the incidence of duodenal ulcer. We know now that it is a common disease, at least six or eight times as common as gastric ulcer. In 95 per cent of cases, it occurs in the first two centimeters of the duodenum, often just beyond the white line and pyloric vein, and usually on the anterior wall. Multiple ulcers—duodenal or gastric and duodenal—are recognized with increasing frequency; statistics vary all the way from 5 to 15 or even 35 per cent. Multiplicity, it may be noted, would point to general rather than to local causes, such as, arteriosclerosis or spasm; its important bearing in the analysis of clinical symptoms is obvious. Melæna neonatorum is probably most often due to duodenal ulcer resulting from thrombosis or sepsis. Kennedy has recently reported three cases in which streptococci were found. Gerdine and Helmholtz in twenty-five cases of duodenal ulcer in infants found streptococci in nearly all.

Veeder has collected ninety-one instances of duodenal ulcer in infants, and added four observations of his own. Nearly all occurred between the ages of one and four months; the majority were on the posterior wall which is the most dependent part when the infant is on its back. Hæmorrhage and vomiting were the chief symptoms. Schmidt in 1109 autopsies on children found duodenal ulcers in infants under one year in 1.8 per cent and only in .6 per cent in later years. The disease is uncommon in children and young adults; this may be explained by greater freedom from infection, nervous and physical strain, bad habits and greater activity of defense mechanisms such as the reticulo-endothelial systems. Duodenal ulcer is at least three or four times commoner in men than women. The reason may lie in worse habits in eating, drinking and smoking, in greater exposure to mental and physical strain. W. M. Mayo calls attention to the more upward direction of the first portion of the duodenum in men as predisposing to longer retention of acid secretion. Duodenal ulcers are usually small and shallow, lacking the hypertrophied mucous membrane seen at the borders of stomach ulcers. Ulcers on the posterior wall are more often indurated and more frequently give rise to hæmorrhage. MacCarty from examination of 425 excised ulcers has noted that duodenitis when localized shows a microscopical picture much like small ulcers, and Konjetsky has dwelt upon the inflammatory rather than vascular changes in the ulcer base from similar material. In three of fifty cases recently operated upon at the University Hospital with typical symptoms of duodenal ulcer, microscopical examination of the ulcer area showed duodenitis alone and no ulcer. Judd, however, thinks that ulcer and duodenitis arise from entirely different causes. The fact that carcinoma practically never develops from duodenal ulcer is of immense clinical importance. The writer has recently seen his only case of what appeared to be a primary carcinoma of the first portion of the duodenum. The experience of surgeons would indicate that partial perforation occurs in about 20 per cent of duodenal ulcers. The pancreas may be deeply eroded, chronic pancreatitis may result:

the writer has seen diabetes result in two instances. Free perforation into the peritoneal cavity is fortunately prevented in most cases by the omentum or by adjacent viscera. The incidence is difficult to estimate; the 7 per cent of Patterson, the writer agrees with—Sippy is too high. Extension of inflammation without perforation may result in abscess which is rare, or in adhesions which are exceedingly common. Congenital abnormalities of the duodenum may be found associated with ulcer, and diverticula may result from it. Stenosis of the pylorus from spasm, inflammatory œdema, or firm scar tissue is one of the most important complications.

Symptomatology. — Periodicity is the most striking clinical feature of duodenal ulcer. Given reasonably intelligent patients, a careful history will reveal it in 85 to 90 per cent of cases. Early symptoms may be unnoticed or obscure or so abrupt and severe as to confuse the picture, but as time goes on cycles of activity are marked by most characteristic events and succeeded by intervals of latency in which the patient may eat anything at any time without a sensation. The onset and cessation of symptoms is often abrupt. Periods of activity may last days or a few weeks to be followed by freedom from symptoms for a much longer time—perhaps for months or even years—but as the disease goes on active periods last longer and latent intervals grow shorter. Persistent symptoms without a break should always suggest complications, especially obstruction or adhesions. Exacerbations are peculiarly liable to return each spring and fall. Epigastric pain or distress is the dominant characteristic of the active stage. Especially in early attacks or in phlegmatic individuals the sensations may not amount to more than vague discomfort, a sense of weight, fulness, pressure, distension or indescribable uneasiness and nervousness. It is important to note that even in subsequent attacks recurring with typical periodicity abdominal sensations may never rise to the dignity of true pain. Usually, however, the complaint is of actual pain, often gnawing or burning or boring, frequently sharp, cramp-like, occasionally intense and demoralizing. Radiation may be to right or left or to the back but nearly always the most severe pain (as well as the varied indefinite sensations) is referred to the upper mid abdomen. Once established, the pain exhibits remarkable uniformity, regularity and what Moynihan has termed "punctuality". The importance of a careful study of the sequence of events in a twenty-four four period during the active stage has been particularly emphasized by Sippy and Eusterman. The absence of symptoms with an empty stomach, the occurrence of pain from one to three hours after eating, the relief by food, the recurrence in greater severity two to three hours after the midday meal, the relief when the stomach empties or when food is taken again—this combination of symptoms practically puts a label on the disease. The cessation of pain after alkalies, after vomiting or emptying the stomach by lavage, its modification by rest and compresses, its aggravation by certain foods, by exposure to cold, and by nervous or physical strain offer important diagnostic suggestions. Other symptoms may help in diagnosis or may obscure it. *Hæmorrhage* is much less frequent in private, than in hospital patients, probably because the disease is recognized earlier and complications are fewer. It may be inaugural and in large amount, or frequently recurrent, or persistent in small quantities leading to marked anæmia. Eusterman has drawn attention to ulcers characterized by rather vague symptoms, low acidity and recurring hæmorrhages which are apparently kept activated by distant foci of infection, removal of which leads to a cessation of symptoms. There are other individuals, not bleeders, who for unknown reasons keep developing new ulcers even after gastroenterostomy, pyloroplasty or more radical surgical procedures. Balfour has recorded remarkable instances of recurring hæmatemesis and melæna with very moderate splenomegaly or with chronic infection of the appendix which have been the occasion of repeated operations for suspected ulcer. *Perforation*, when acute, is practically always from rupture of an ulcer on the anterior wall. There seem at times to be queer epidemics of acute perforating ulcers. The picture of the abrupt abdominal accident is usually clear. Symptoms of diaphragmatic, as well as of abdominal peritoneal irritation are important. The duodenal contents are as a rule fortunately less virulent than the gastric and instead of general peritonitis large local

purulent or sero-purulent collections may form. Evidence of slow perforation with invasion of the pancreas, periduodenitis or formation of adhesions is apparent in a large percentage of operated cases. *Vomiting* may be an occasional symptom but when persistent should suggest other diagnosis or complications, especially obstruction.

With the diagnosis strongly suggested by characteristic sequence and grouping of symptoms, a further clinical study of the reaction of these symptoms to treatment, with certain clinical tests, and above all a competent x-ray examination will give valuable information as to the size and position of the ulcer, and the presence of complications or associated abdominal disease. X-ray examinations are invaluable, but they should supplement the clinical investigation. Negative evidence should be given due weight, and should lead to careful review of the clinical diagnosis. The writer has been impressed with the advisability of repeated x-ray examinations and the advantages of atropin hypodermically in the study of spasm. The stomach tube used judiciously gives important evidence. Fractional determinations of acidity are rarely necessary, but it may be wise to test it at the height of the patient's distress after an ordinary meal, as well as after an Ewald breakfast. Excessive secretion of high acidity, food remnants from the night before, sarcinæ or yeasts in large numbers in the sediment, indicate obstruction of low or high degree. Examinations of the stools for occult blood are of little value unless several times repeated on a meat free diet. They serve at times to suggest the cause of unexplained secondary anæmia. They are of no value in the control of treatment. Blood counts rarely help in diagnosis; only one instance of moderate polycythæmia has been seen. Leucocytosis may occur with partial as well as complete perforation; on the other hand the blood chemistry may be of great value in suspected alkalosis and in certain cases of obstruction.

A differential diagnosis.—In a recent review of fifty cases operated upon during the last three years at the University Hospital, and of 200 private cases the writer has been impressed anew with certain facts which may be grouped as follows:

1. The importance of the *proper evaluation of pain;* its periodicity, diurnal variations, and modification for better or worse by varied factors. It has been impossible in the histories to pick out a definite constitution or type more prone to ulcer. Yet one is impressed with the great differences in pain response, in tendency to hæmorrhage or to recurrence of symptoms after operation in different individuals. C. H. Mayo has noted that certain people seem to have particularly insensitive abdomens. These individuals will respond slowly to the neuro-muscular irritation, which is the probable cause of pain in ulcer, and may come to us only when complications have increased the degree of irritation; on the other hand we see patients who all their lives have reacted excessively to varied stimuli in nervous, motor or secretory ways. These form the hypersthenic digestive type of Hurst, Fyle, and others with hyperperistalsis, quick emptying hypertonic stomachs and hyperacidity. They may respond to abdominal, or more distant irritation, or infection with increased muscular spasm of pylorus or duodenum. Perhaps this type may be more prone to duodenal ulcer as Hurst thinks, and less amenable to treatment whether medical or surgical, once ulcer develops. Pain accompanying ulcer has many analogies with that of migraine, of abdominal allergy, and of angina pectoris. Irritation by the stomach content is certainly only one factor in its production. Many facts suggest that abnormal rhythms in peristalsis, or abnormal states of muscle tonus play a major rôle, but we are yet unable to connect any special kind of pain with a definite type of ulcer.

2. The importance of marked *changes* in the *familiar sequence of symptoms* as an indication of complications, particularly of obstruction and adhesions or of the development of other abdominal disease.

3. The *paucity of signs on general examination.* Many of these patients are remarkably well in other ways. Focal infections, if present, bother them little. Many of them are thin and nervous, but strong. Localized epigastric tenderness, and rigidity, except in perforation, is not marked. Visible peristalsis in cases of obstruction is the most important sign.

4. The rather *frequent onset of symptoms* soon *after abdominal operations* especially after appendectomy. The great frequency of other

abdominal disease, particularly cholecystitis, appendicitis and that indefinite complex we call chronic colitis. *Abrupt onset* of ulcer *in youth* often *means appendicitis* and not ulcer; *abrupt onset after fifty* not infrequently *means carcinoma* somewhere in the abdomen. In the fifty operations mentioned above upper abdominal adhesions of wide extent were found in twenty-seven, definite cholecystitis was present in eighteen, chronic lesions of the appendix were noted in four. Appendectomy had previously been done in thirteen cases, cholecystostomy for stone in one, pelvic operations in two.

5. The comparative *benignancy of the disease.* A number of the hospital patients were in the late fifties or sixties with symptoms dating back ten, twenty or even thirty years, yet most of them had done strenuous work all their lives. Hæmorrhage occurred one or more times in 40 per cent of the hospital cases. This is a high percentage; about twice that usually recorded, yet none died from it. Acute perforation will always constitute the chief danger of the disease.

6. The wholly *insufficient medical treatment* that most patients have received. The failure of the surgeons, both in hospital and in private cases, and these surgeons of unquestioned ability, even to approach the results published from many clinics.

The diagnosis of duodenal ulcer is usually not difficult. It demands, as has been seen, careful consideration of subjective symptoms, and of evidence obtained by x-ray and the stomach tube. The symptoms of ulcer run true to form. Modification of the characteristic cycles, of the typical reactions to various irritants and to methods of relief, usually means complication by obstruction or adhesions. The diagnosis of obstruction is readily made by the study of the symptoms, of the results obtained from chemical blood examinations, and from the x-ray and the stomach tube. Adhesions alone rarely give the clear-cut clinical picture of ulcer though they frequently obscure it. The pain of ulcer may be associated with distress due to other abdominal disease, and a careful history may indicate suggestive change in symptoms when the other disease develops. Patients may recognize distinct differences in the types of their abdominal pains; as in a woman seen recently who had duodenal ulcer associated with appendicitis and cholecystitis. The greatest problems in diagnosis are provided by the big group of asthenic, psychoneurotic, constitutionally inferior individuals who break early under the friction and strain of modern life, develop many kinds of abdominal distress, and show varying degrees of chronic colon disease, ileal stasis, duodenal kinking and visceroptosis. No definite rules can be formulated for the interpretation of the strange cubist pictures these individuals portray.

Treatment.—We may do something to prevent duodenal ulcer by control of infections in early life and endeavours to correct deficient or otherwise faulty diets. The results of Rosenow in protecting animals by immunization against the development of experimental ulcers would encourage the use, winter and summer, of vaccines in man. Based upon our present knowledge treatment aims at the removal of certain causes influencing nervous irritation and muscle spasm, the control of infection as far as possible, and the neutralization of gastric juice corrosion. Ulcer symptoms start frequently in the early twenties when the youth first faces the varied problems of modern life, and is exposed to nervous and physical strain and often violates all rules of hygiene in regard to diet, rest, and the use of tobacco and alcohol. Regulation of habits, care of the nervous system, frequent meals, judicious use of drugs like alkalies, bromids, and atropin are obvious indications in preventive treatment. All clinicians, internists and surgeons alike, are now realizing the necessity of treating the ulcer patient as well as the ulcer itself. The problem is often economical and social as well as medical. In the early stages of the disease the profession now votes nearly unanimously for a trial of medical treatment. The initial treatment should be thorough. Ambulatory treatment may remove symptoms but it certainly is less liable to cure. Rest for three or four weeks relieves nervous tension and muscle spasm. Infections of teeth, tonsils, sinuses or appendix may be dealt with now or a little later. Since the time of Celsus clinicians have felt that healing of the ulcer would be favoured if corrosion by the gastric secretion could be controlled. Volumes have been written about gastric secretion, volumes are still being written. We know of no way to control directly the action of pep-

sin; we do know, however, that it is inactive except in the presence of free hydrochloric acid. The profession owes a great debt to the late Dr. Sippy for the most rational scheme of medical treatment yet evolved; its principles are sound and its results encouraging. Details of the treatment are well known and need not be repeated here. It may with advantage be modified in certain particulars. It is not usually necessary to aspirate stomach contents frequently. We have learned the dangers from excessive administration of alkalies, especially in cases of retention, or in coincident renal or hepatic disease. Neutral calcium or magnesium phosphate may be substituted for the magnesium, sodium or calcium compounds suggested by Sippy. Intervals between feedings may in a few days be increased to two hours in many cases and a soft diet started in the second week. Some patients do better on carbohydrates and eggs from the start than on milk. The large doses of alkalies recommended by Sippy are not necessary in the majority of cases. Tincture of belladonna is a valuable addition to the alkali treatment. Bromids or luminal are frequently useful to control general nervousness and lessen reflex irritation. We have had no experience with protein shock treatment, but recent reports of Gohrbaut would stamp it a definite failure. X-ray treatment should be given a more thorough trial. Doctors Bryan and Dormody noted decrease of free and total acidity in certain cases, Lenk and Holzknecht report favourable results which they refer to the influence on spasm, and not to decrease of acidity which they found remained unaffected. Sippy was right in emphasizing the importance of long treatment to follow the rigid rest cure period; what may be termed continuity of therapeutic effort is woefully lacking in duodenal ulcer as well as in other chronic disease. It is of course difficult to say when a duodenal ulcer has healed but we know from scars at post mortems or operations, from disappearance of symptoms and of x-ray signs that healing is not infrequent. Fresh ulcers may be the cause of renewed attacks but when, year after year, stereotyped symptoms keep recurring in the same way—often despite treatment—we are probably dealing with the same chronic persistent ulcer.

This type of ulcer should be dealt with surgically just as much as the acute perforative ulcer, the ulcer with marked obstruction, or the ulcer with recurrent hæmorrhage. Indications and contraindications for operation should be studied carefully by both internist and surgeon for, as Eusterman has noted, bad results of operative treatment are due more often to the careless selection of cases, and the poor material dealt with than to poor surgery. It is the duty of the internist to prepare patients properly for operation. We have learned valuable lessons of the dangers of alkalosis, dehydration, and intoxication from the investigations of Hardt and Rivers, Berkman, McVicar, LeNoir, Richet and Jacquelin. Lavage, transfusion, control of alkali dosage, glucose by rectum or intravenously and hypodermoclysis of 1 per cent salt solution are measures which have contributed enormously to favourable operative results.

Surgeons have learned to appreciate the value of post-operative treatment. It takes weeks or months to heal a chronic ulcer even after gastroenterostomy. Patients should be kept in bed at least three or four weeks and under close supervision for six or eight weeks after operation. A Sippy cure, somewhat modified in strictness with smaller doses of alkalies and less frequent feedings, should be carried out during this period. The future life should be well planned, the diet regulated, and frequent meals continued, and alkalies and belladonna given when symptoms recur.

The internist is naturally intensely interested in the varied problems of surgical treatment which will be reviewed by Dr. Starr to-day. My experience with gastroenterostomy has been much more fortunate than that of medical men like Hurst, who say they see more patients with symptoms following operations than from the primary disease. Pyloroplasties in my experience have been followed too often by obstruction and formidable adhesions. Excision of the ulcer, and partial gastrectomy, will be necessary only in a small percentage of cases. Internists must remember that, as W. H. Mayo says, the surgeon has not shot his bolt by one operation any more than the medical man has exhausted his measures by one so-called "cure". Let us hope that the greater appreciation of each other's work, and the closer cooperation between clinicians of opposing camps as is the rule to-day will lead to a better understanding of the varied problems of duodenal ulcer in the near future.

THE SURGICAL TREATMENT OF DUODENAL ULCER*

By F. N. G. Starr, C.B.E., M.B., F.A.C.S., F.R.C.S.

Toronto

IN order to clear the decks for the more common types of duodenal ulcer, perhaps one should mention the ones that formerly occurred so frequently following severe burns in children. These are fast disappearing as a complication because of the improved treatment of burns; first, by the immediate application of a 5 per cent tannic acid solution to the burned area; second, by means of direct blood transfusion to obviate shock, and third, by exsanguination transfusion, as first devised by Capt. Bruce Robertson, to reduce toxæmia.

The onset of an acute ulcer of the duodenum following some form of infection, which declares itself suddenly by perforating, is a most alarming condition and leads to a calamity, if not recognized early and dealt with promptly by surgical intervention. All that is necessary is to cauterize the perforation or cut out the ulcer, the doing of which gives one the opportunity of determining whether there is a kissing ulcer on the posterior wall as well. If there is, cauterize it and sew the walls together, and then suture the anterior wall.

Now, how is this to be done? If, as sometimes happens, there is no induration about the ulcer, all that is necessary is to surround the edges of the ulcer with a purse-string suture and a second sero-muscular re-enforcing suture, leaving the ends of this second suture long, and with this tie over the ulcer a patch of omentum, taking care not to constrict the lumen.

Sometimes a penetrating ulcer develops a tremendous amount of fibrous tissue about it, and then perforates through a very small opening surrounded by extreme œdema. In this the crater of the ulcer is very thoroughly cauterized and the opening closed. This is not sufficient because, while the induration is absorbing, the patient starves to death. Therefore in these it is necessary to do a posterior gastro-enterostomy, being careful before closing the abdomen to wipe out from Morrison's pouch or from elsewhere in the peritoneal cavity any stomach contents that may have escaped. These patients, if operated upon soon after the perforation occurs, invariably do well providing the surgeon doesn't waste too much time "mucking" and groping about the peritoneal cavity.

It is important also in all cases of perforation to examine the gall bladder and the appendix for possible sources of infection.

In five consecutive cases of perforated duodenal ulcer I removed a very large angry looking appendix containing pus, and I have seen such a condition in many others. Hence in operation for duodenal ulcer I always inspect the appendix.

Sometimes one sees a case of duodenal ulcer that may or may not have a previous history, but in which a severe hæmorrhage has occurred. In these one should never be tempted to operate. Such ulcers are usually on the posterior wall, and are therefore less accessible and more difficult of approach, and the necessary manipulation may be just too much for an already exsanguinated patient. Various methods for the control of hæmorrhage may be resorted to. Among these may be the subcutaneous administration of some one of the preparations of horse serum. An intravenous of 5 c.c. of a 10 per cent solution of calcium chloride may be used; at the same time the patient's blood is typed and possible donors are also typed out for a direct blood transfusion. This naturally takes time, and while waiting the stomach may be washed out with hot saline. As soon as the washing solution comes away clear, one to two drachms of adrenalin solution may be put down the tube, or four drachms of peroxide. As soon as this is completed it is well to give saline solution subcutaneously in order to maintain the body fluids. When the patient is well recovered from the hæmorrhage, some type of operation which includes excision of the ulcer may be resorted to.

* A contribution to a Symposium on Duodenal Ulcer, given before The Canadian Medical Association at the annual meeting in Victoria, June, 1926.

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This brings one to the more common forms of ulcer on the anterior surface with a small amount of induration, and for these some type of pyloroplasty is to my mind the most satisfactory. What we do now is to map out with mucosa clips the area to be excised; cutting inside the forceps with a cautery knife in the direction of the bowel lumen, the entire ulcer bearing area is excised. One then inspects the posterior wall to make sure one is not dealing with a kissing ulcer. I then find it worth while to cut the pyloric ring, and since doing this there has been no case of recurrence of the ulcer. The opening in the duodenum is then closed at right angles to the lumen of the gut with a three layer suture, being careful that the first layer sutures mucous membrane only, as suggested by Judd. This is the principal hæmostatic suture.

Sometimes in a limited number of suitable cases the Finney operation may be used.

In the greatly indurated ulcer, producing almost complete obstruction with a large crater, the ulcer bearing area may be resected, really making a partial gastrectomy, and the open end of the duodenum closed, while the open end of the stomach may be anastomosed with a long loop of jejunem in front of the transverse colon, or both the open ends of duodenum and of the stomach may be closed and a posterior gastro-enterostomy is done. If, however, the patient with this type of ulcer is emaciated, bloodless, and dehydrated, he should have subcutaneous saline previous to operation, and blood transfusion either just before or immediately following. The operation should be done with paravertebral anæsthesia, and the most rapid method adopted, namely a posterior gastro-enterostomy with a short loop. If the stomach is greatly dilated, a long pouch of stomach should be brought through the transverse meso-colon and sutured there to allow for a return to a normal sized stomach. This procedure can be accomplished in a few minutes with but little disturbance to the circulation if the preliminary precautions are carried out.

After treatment.—If hæmorrhage follows the operation it may be because the patient is a bleeder, which is rare, or it may come from the ulcer itself if the ulcer-bearing area has not been destroyed, or it may be, and usually is, due to some failure in technique. This is hard medicine to take, but it must be faced and will be helpful to the next patient. The treatment is the same as previously mentioned.

The patient after operation should be encouraged to lie upon his right side in order that gravity may assist in emptying the stomach. He is encouraged to drink water as soon as he wants it. He should get it by Murphy drip or interstitial, and if he does get from 50 to 100 ounces in the first twenty-four hours, his convalescence will be more rapid.

Don't worry about the bowels, they will take care of themselves when the time comes. More people are killed by fussy worry about the bowels than are saved by an early evacuation. Gas pains are materially relieved by the old-fashioned linseed poultice.

Be on the watch for acidosis and also for alkalosis. In the former the ghastly appearance of the dehydrated patient, with the odour of acetone on the breath, may most quickly be relieved by an intravenous injection of 5 per cent glucose, and the other by an intravenous injection of 600 c.c. of a 6 per cent solution of saline.

Of course, while the patient is in hospital he continues his alkaline medication and a diet of milk and easily digested soft solids is given at frequent intervals, but remember, he is not cured when he leaves the hospital, for he is now using a mechanical apparatus devised by the surgeon, and rarely is it as good as the original. He should therefore have a regime of how to live well drummed into him. It is taken for granted that before the patient is submitted for operation all gross foci of infection have been effectively dealt with.

I think I may safely say that our after results are decidedly more satisfactory since we have made a practice of handing each patient a typed sheet of directions such as the following:

After your discharge from hospital, the most important factor in securing a good ultimate result is a rigid adherence to the well-accepted, common-sense principles of life, and avoiding excesses of every sort. Whenever possible for the first six months never stand when you can sit down, and never sit down when you may lie down. You must, however, not consider yourself an invalid, but by carrying out a fairly strict regime for six months, you should have an excellent result. You will probably enjoy better health immediately than you have for years, but this is no indication that you may take liberties with regard to irregularities in diet or excessive work, either mental or physical.

Your diet for these six months broadly should include the following: Soups: any light soup. Meats: any

of the easily digested meats: sweetbreads, red beef, mutton, lamb, poultry. These for the first two or three months at least should be put through a meat chopper, and should be boiled or broiled. Fish: mainly the white variety—fresh water fish preferable; oysters, boiled or raw. Eggs in any form except fried. Vegetables: (for the first two or three months these should be mashed and strained, or put through a food chopper) the easily digestible kinds, such as asparagus, spinach, peas, beans, potatoes and carrots. Any of the cereals can be taken, but oatmeal and similar porridge should be cooked thoroughly in a double boiler. Fresh bread should be avoided, but bread a day old may be taken. Desserts: any of the light puddings. Fruits: mainly stewed fruits. Fatty foods: cream, butter and olive oil. Drinks: milk, butter-milk, cocoa, carbonated mineral waters, and an abundance of plain water.

The following must be avoided: rich soups, fried foods, pork, veal stews, hashes, corned meat, potted meat, twice-cooked meat, liver, kidney, duck, goose, sausage, sardines, lobster, preserved fish, smoked fish, salmon, cauliflower, celery, radishes, cabbages, cucumbers, sweet potatoes, tomatoes, beets, corn, salads, bananas, melons, fresh berries, pineapple, hot bread or cakes, nuts, candies, pies, pastry, preserves, cheese, strong tea, strong coffee, alcoholic stimulants, and any excessive condiments.

The use of tobacco should be dispensed with for three months, and then used in moderation, preferably only after the evening meal, but at any rate never before luncheon.

This diet will allow of a certain laxity after three months, but for the first three months it is considered very important that you follow it fairly rigidly. During the first three months it is essential that you should avoid trying to carry on with three main meals. Rather you should supplement these by malted milk, eggnog with toast, or some such light nourishment at 10 a.m., between 3 and 4 p.m. and before retiring. If there is any return of pain similar to your former distress, report to your physician at once.

DUODENAL ULCER: THE RADIOLOGICAL ASPECT*

By W. H. Dickson, M.D.

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WITH the introduction of radiology in the examination and diagnosis of gastro-intestinal disease, the extreme frequency of this condition was demonstrated, and to-day the radiologist in a general clinic counts that day lost, in which he has not seen at least one duodenal ulcer; it is not uncommon to see five to seven of these in one morning.

The symptoms of the lesion present, it is true, a very classical picture, so much so that one of our eminent British surgeons in his excellent work on the subject states "It is not necessary to see the patient, a diagnosis may easily be established by correspondence." We shall present one of these correspondence diagnoses on the screen to-day. It is true the lesion does present such a clear cut train of symptoms that unless a careful examination is carried out an erroneous conclusion may be arrived at.

Gall bladder disease, carcinoma of the pylorus, appendicitis, renal calculus, tabes, duodenal ileus and abnormalities of the ligament of Treitz may and do give rise to symptoms at times identical to those of duodenal ulcer. It is in these cases a careful radiological examination will be the controlling factor in arriving at a correct diagnosis.

We do not by any means hope to have you infer from this, that radiology is the sole means of correctly diagnosing this condition, and that all other methods should be cast aside. We do believe, however, that any case with symptoms referable to the right upper quadrant should have a thorough investigation by means of the x-ray, and no examination can be considered complete until a painstaking and efficient series of observations have been made by a radiologist.

With the percentage of correct diagnoses of duodenal ulcer ranging from 93 to 95 per cent in the hands of competent radiologists, it is surely worth the added trouble and slight delay before a definite line of treatment is instituted.

It is interesting to note that about 90 per cent of all duodenal ulcers occur in the first portion of the duodenum or the *caput duodenalis*. This is a very great advantage to the radiologist as this portion fills better and remains filled longer than the other divisions of the duodenum. The great majority of ulcers are situated on the anterior surface and occur as a single lesion; only about 20 per cent

* A contribution to a Symposium on Duodenal Ulcer, given before The Canadian Medical Association at the annual meeting in Victoria, June, 1926.

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having an accompanying, or so-called "kissing ulcer" on the opposite wall. An active ulcer may be of very small size and yet be capable of demonstration; ulcers with a crater about the size of a large pin head have been shown on radiological examination. Their appearance will vary with their age, size and the amount of scar tissue or spasm present.

Various investigators have developed different methods of examination and technique. To attempt a thorough description of these would consume more time than has been allocated to the symposium to-day. Two outstanding systems are used by different clinics and a brief description of these will suffice. The first system depends almost entirely on the use of the fluoroscope, all the information being obtained on the screen, films being made for record only. This is used throughout Europe and in some of the American clinics. The second method is by serial radiology as developed by Lewis Gregory Cole. In this method no screen is used, but a series of films varying from thirty-five to fifty in number is made on the case and the diagnosis arrived at by an observation of all the films. Both methods have their advantages and disadvantages. In the laboratory of the Toronto General Hospital we have attempted to combine the two.

First a thorough screen examination is done with the patient in the upright position. The pylorus and caput are palpated and manipulated until both have been well filled several times and evidence of any adhesions has been definitely secured. The patient is then rotated slightly with the right side toward the screen. This position will clear the descending duodenum from the caput at the same time will give a good view of the anterior and posterior walls of the latter. The patient is then lowered into the prone position and screening is again carried out. In this position the caput fills better and holds the opaque substance longer than in the erect. When all information has been obtained from the screen, a series of films is made ranging in number from twelve to seventeen. The most normal appearing stomach and duodenum on the screen has this routine series made. We have found that about 3 per cent of the cases show no evidence of disease on the screen, but well marked changes on the films. On the other hand about 2 per cent of the cases show definite change by the screen examination but on the film a normal appearance is recorded. When this situation arises a re-check examination is done. At the conclusion of the examination a correlated study of the screen observation and the series of films is made and a diagnosis arrived at.

From the standpoint of the radiologist the signs of duodenal ulcer may be divided into two divisions: (1) direct evidence and (2) indirect evidence; the latter lending itself to several subdivisions.

In our opinion the direct evidence is by far the most important. It is demonstrated on the screen or film as a constantly deformed caput. When this evidence was first mentioned by Lewis Gregory Cole as the outstanding point in the diagnosis of the lesion, much adverse criticism was aroused. However, as time has gone on, the soundness of his claim has been proven. To-day I believe no radiologist would make a diagnosis of duodenal ulcer without this evidence. It is the radiographic demonstration of the pathological change, and is just as convincing as the view of the ulcer in the open abdomen is to the surgeon or the section at autopsy is to the pathologist.

This deformity is caused by several changes: the crater of the active ulcer, fibrous or scar tissue in the chronic or recurring ulcer, and a

FIG. 1.—Duodenal ulcer.

certain amount of spasm in some cases. The presence of spasm accounts for the well marked deformity seen at the time of examination, and the slight deformity met with at operation; the spasm being absent under the anæsthetic and the scar only being present. It is not an uncommon occurrence to see an ulcer well marked on the film, demonstrated on the operating table only after massage of the duodenum has produced a hyperæmia around the scar.

The most common deformity caused by ulcer is the formation of the clover leaf cap. Here the ulcer is situated on the anterior wall with stellate scar tissue radiating to the outer borders, changing the normal conical shape to that of a clover leaf or sometimes a pine cone appearance.

Deformity of the base is a frequent observation. Here the lesion is situated close to the sphincter, and destroys the smooth, even appearance of the sphincter line by the presence of one or more notches in the base of the cap.

FIG. 2.—Chronic duodenal ulcer with peri-duodenitis.

The classical niche of gastric ulcer finds its duplicate in duodenal ulcer. A crescentic or bud-like projection is often observed protruding from the lesser curvature side of the caput. This is due to the crater of the active ulcer destroying the mucosa, and part of the muscularis, the destroyed area being filled with barium. This niche may be present with no other deformity, or it may be accompanied by an incisura. The incisura will be either spasmodic or organic depending upon the age of the lesion and the amount of fibrous tissue present.

The chronic duodenal ulcer may produce so much scar tissue that the caput is virtually destroyed, and is never visualized. Here we will have to depend to some extent on the indirect evidence of hyperperistalsis and retention to establish a diagnosis.

Occasionally, an early ulcer of a few weeks duration will be found extremely difficult to visualize. The crater is small and shallow, no scar or spasm is present, and the caput appears normal; only by palpation may the barium be forced out of the caput, and the small crater seen.

FIG. 3.—Small ulcer on the anterior surface of the caput, shown by slight scarring.

A rather high percentage of duodenal ulcers perforate. Fortunately the perforation in the great majority of cases is slow, a localized peritonitis results, and the perforation is walled off. By the walling off process an accessory pocket is formed. This may be demonstrated by radiological examination. The pocket fills with the ingestion of the opaque meal, but does not empty with the stomach, residue being present in the pocket for hours or even days after the stomach has emptied. In the erect posture the accessory pocket presents a characteristic appearance, layers of barium, secretion and gas being superimposed. The outline of the pocket is usually irregular, and one may or may not see the fistulous tract leading to it. A duodenal diverticulum may be confused with an accessory pocket. The latter,

however, is usually smooth walled, round in form and contains no gas or secretion. It empties sooner than an accessory pocket. The great majority of duodenal diverticulæ arise from the second and third portions of the duodenum, and seldom from the caput.

To be of diagnostic value the deformities described above must be constant. Observations made at different times must show the same deformity. The films should all show the same defect so well that when superimposed upon one another the deformity will match as if stamped by a stencil.

Adhesions of gall bladder origin will in many cases give a deformity to the caput, requiring extreme care before a differential diagnosis can be made. In these cases the caput will be

FIG. 4.—Diverticulum on third portion of the duodenum simulating a normal caput.

FIG. 5.—Perforated duodenal ulcer, accessory pocket situated in the pancreas.

FIG. 6.—Duodenal ulcer with perforation anteriorly.

FIG. 7.—Chronic stenosing and perforated duodenal ulcer. Accessory pocket extending below the lower border of the liver, passing backwards then upwards over the superior surface of the liver.

found somewhat angulated upon the pyloric end of the stomach due to the drag of the adhesions. Though the caput possesses a deformity, on close observation it will be seen to be of a non-constant type. A close comparison of the serial films with one another will show slight variation in the deformity, and on attempting to match these by superimposing, it will be seen marked changes take place in the deformed duodenum.

A Morris membrane will deform the duodenal caput. Fortunately it is carried across the pyloric end of the stomach and gives a filling defect here also. When the films are compared, one notes the irregular serrated lesser curvature close to the pylorus, changing slightly on each film. This along with the change in the deformity of the caput is sufficient to clear the diagnosis.

FIG. 8.—Morris membrane across pylorus and duodenum.

Harris' membranes will give clinical symptoms almost impossible to differentiate from duodenal ulcer. This is particularly true of symptoms pointing towards early obstruction. A Harris membrane, however, never involves the caput proper, being reflected across the descending duodenum. On examination, the caput will be seen to be of normal shape though somewhat dilated from the obstructed second portion. The second portion will be seen as a broadened, flattened ribbon of barium, the valvulæ conniventes being absent to a greater or less degreee according to the type and size of membrane present.

FIG. 9.—Harris membrane, shown by marked dilated second portion of the duodenum.

A drag through the mesentery of the superior mesenteric artery produces a duodenal ileus which clinically simulates a duodenal ulcer. In these cases we observe the well filled caput. The descending duodenum and the first portion of the transverse will be dilated, the valvulæ conniventes being well marked with a slight drag or entirely absent if the drag is of great extent. The barium will flow back and forwards from the caput to the obstruction, eventually under pressure passing this obstruction in a constricted stream. The great majority of these cases is accompanied by atony of the cæcum with the cæcum mobile.

The dilated gall bladder at times gives a definite deformity to the caput. It, however, presents a smooth round pressure defect into the latter, which should not cause much difficulty in differentiation.

Pressure from the spine will produce a defect in the duodenum that counterfeits an ulcer to a marked degree. If one observes it closely, however, the normal mucosa may be seen in the caput, and a change of posture will produce a different appearance in the filling defect and in some cases allow the caput to fill well.

The indirect evidence of duodenal ulcer was demonstrated by investigators at an earlier

FIG. 10.—Normal caput, but marked duodenal ileus due to a drag through the mesentery, of the superior mesenteric artery.

period than the direct. It was on this indirect evidence the diagnosis by the "symptom complices" of the European workers was made. While this indirect evidence is of some value, it is only so in adding to that already obtained from the deformed caput.

In a great many duodenal ulcers, especially the non-obstructive or early obstructive ones, gastric tone is increased, and the hypertonic stomach is seen. It may be due to a reflex action from the irritation, or from the effort of the stomach to empty itself against the early stenosis of the ulcer.

If the lesion is of long duration, and obstruction has taken place, one usually finds hypotonus present, with the extreme case showing an atonic stomach.

Nearly all duodenal cases show definite changes in the gastric peristalsis. The active ulcer non-obstructive in type is frequently accompanied by a hyperstalsis in the stomach. The systole and diastole are of shorter duration, and the wave depth is somewhat increased. In the ulcer which has gone to pyloric obstruction, marked peristaltic changes are noted in the stomach. The wave is well marked close to the cardia; it immediately becomes deepened, about equally marked on the greater and lesser curvatures. In extreme cases the two waves meet, producing a complete absence of barium between them.

There is a marked variation in the diastolic and systolic time in this type of case. The systolic lasts as long as thirty seconds, wave following wave in an attempt to empty. Diastole then appears, all movement ceases and the stomach presents a well marked atonic form. The duration of the diastole is also increased.

The emptying time of the stomach shows a variation from the normal in duodenal ulcer. In the early ulcer without obstruction we find the stomach empty before the six hour observation. If hourly examination is done it will be noted that this type of stomach will be clear of barium one and a half to three hours after the ingestion of the opaque meal.

In the obstructing ulcer the opposite is the rule. We find residue in the stomach from ten to one hundred hours after the barium has been taken.

A common source of error in diagnosis is duodenal spasm, due to an extrinsic cause. We have had the chagrin of making a positive diagnosis of duodenal ulcer only to find at operation, the gall bladder or appendix was the real offender. In these cases when the spasm simulates an ulcer, watchful waiting is of great benefit. Repeated observations made at half hour intervals frequently show the spasm absent at the second or third observation. Placing the patient on antispasmodics or upon a milk diet for several days will have the same effect.

Radiology has its chief value in the diagnosis of the lesion; it may be, however, of value as an aid in the treatment. We do not mean by this that a radiologist should take unto himself the place of the skilled surgeon or the experienced physician; what we do mean is that in every case when the ulcer is demonstrated, we also have evidence pointing to what probably will be the best method of treatment for that individual case.

We are able to indicate whether the ulcer is recent, whether any adhesions are present resulting from a slow leak or whether stenosis and obstruction are occurring, thus outlining whether surgery or medical treatment is best in the case under consideration.

A frank discussion of each case of duodenal ulcer with the attending medical man will be of benefit to all concerned, the patient included.

NEPHROSIS OF THYROID ORIGIN*

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THE term nephrosis was introduced by Fredrick Müller[1] in 1905. The condition, carefully defined by Volhardt and Fahr[2] in 1914, and later elaborated by Epstein[3], and many others, is now recognized as a syndrome of definite clinical symptoms and pathological findings.

It is characterized by an insidious onset, chronic course, œdema of varying degree, diminished output of urine, albuminuria varying from a trace to abundance, the presence in the urinary sediment of hyaline and granular casts and lipoid granules but no red blood cells. Fluid may be found in the serous cavities, especially in the peritoneum and the pleural sacs.

The blood shows a diminution of the total protein, due chiefly to the lessening of the albumin. As the globulin remains normal or becomes increased, the normal albumin-globulin ratio of the blood is altered. The blood cholesterol usually is either at the maximum normal level or is definitely increased.

Clinically, the disease is characterized by certain negative symptoms which differentiate it from other renal diseases, namely, the absence of renal insufficiency as shown by the blood chemistry and renal function tests, and the absence of cardio-vascular disturbance, *i.e.*, high blood pressure and heart hypertrophy. These symptoms, however, may appear towards the end of the disease when renal function becomes impaired as a result of inflammatory changes in the kidney, changing the pathological picture of nephrosis to that of nephrosis combined with diffuse glomerular nephritis.

The renal pathology of nephrosis is confined for the most part to the convoluted tubules of the kidney. There is a fatty degeneration of the epithelial lining of the tubules, which would indicate that the kidneys are participating in the metabolic disturbance associated with the increase of the lipoids in the blood.

A low basal metabolism is found in certain cases of nephrosis.

In this paper I wish especially to draw attention to a type of nephrosis met with particularly in female adolescents. In addition to having most of the symptoms of nephrosis, this type presents certain symptoms of myxœdema. The skin and the hair are dry, the palms of the hands and the soles of the feet are thick, rough and scaly. The mental processes are slowed. Weakness and loss of memory are almost always present. The patient is often listless, drowsy, slow of speech, and with altered voice. Menses are irregular or, more usually, suppressed. This association of nephrosis with a subthyroid condition has been emphasized by Epstein.

The type can best be illustrated by reference to particular cases, and I shall deal with three, each presenting different peculiarities.

Case 1.—Early or incipient nephrosis.—This case, Miss B., has been under my observation since November, 1924. A history of the early features of the case was published in the *Journal* in June 1925.[4] The symptoms presented typical myxœdema with slight nephrosis—albuminuria, but no casts or red cells, and normal blood cholesterol.

The patient was given desiccated thyroid gland, two grains twice daily. Within two weeks her weight fell by six pounds, and her basal metabolic rate was raised to +1 per cent. The puffiness had disappeared, she was much brighter and took an interest in her surroundings. The albumin had practically disappeared when she left the hospital on December 22, 1924, for Christmas. She was to return in two weeks, but did not do so. It was not until March 11, 1926, sixteen months later, that I again saw her.

History during interval.—She continued taking thyroid gland in two grain doses twice

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daily for five months. She was then in the best of health, her menses appearing regularly, and feeling that she required no further treatment, she ceased taking thyroid.

From the end of April, 1925, she continued in normal health until the end of August, 1925, when the old symptoms recurred, including cessation of menses. She had to stay at home and rest from work frequently. So she continued until December, 1925, when she gradually began to improve. The menses re-appeared in March, 1926, and she was able to stay at work without interruption from ill health.

At present she takes music lessons once a week and attends night school twice a week. This gives one an idea of her present mental condition and ambition.

Physical examination on March 11, 1926, reveals a normal well developed girl in perfect health, with basal metabolic rate +7 per cent. The thyroid is slightly enlarged, the urine normal. It would appear that the function of the thyroid gland has increased sufficiently to be able to take care of the metabolic demands of the body.

Blood findings.—Urea nitrogen 12.1 mg. per 100 c.c. whole blood; uric acid 2.8; creatinine 1.2; chlorides 494; cholesterol 216; calcium 10.8 mg. per 100 c.c. serum.

Blood count.—Red blood cells 4,260,000, white 7,000, hæmoglobin 85 per cent.

Sturgis and Whiting[5] have reported only one similar case out of twenty-six cases of hypothyroidism. It would seem, therefore, that in rare instances temporary thyroid treatment, with sudden discontinuance, produces, by first withdrawing the stimulus of the body metabolism from the patient's thyroid, and then suddenly reapplying it, a jolt to that thyroid leading to beneficial results.

Case 2.—Nephrosis with hypothyroidism and hypoparathyroidism and fatal termination.—This case, Miss M., has been already fully reported in this *Journal* in June and August, 1925.[4,6] It presented a typical condition of nephrosis and hypothyroidism, complicated by hypoparathyroidism. Administration of desiccated thyroid and Collip's extract of parathyroid restored the patient to normal condition for a fairly long period, the nephrosis steadily diminishing, but there was a peculiar susceptibility to intercurrent infections, one of which finally proved fatal.

Case 3.—Nephrosis with hypothyroidism and hyperparathyroidism.—Miss K., nineteen; weight 91 lbs.; height 63.5 inches. Born in Austria. Came to Canada in September, 1924, and lived in Portage la Prairie, Meadows, and Winnipeg, working as a domestic servant.

In March, 1925, she reported to the out patient department of the Winnipeg General Hospital on account of amenorrhœa. The Knox intelligence test showed a mental age of seven. Albuminuria was present. On January 14, 1926, she was admitted to the Winnipeg General Hospital on account of emaciation, weakness, slow mentality, amenorrhœa and albuminuria.

Initial condition (Fig. 1), face long and expressionless, neck very thin, hair normal, skin rough, dry and cool, flesh firm and hard on pressure as though dehydrated. Findings of heart, lungs and abdomen negative, blood pressure 82 - 64, pulse slow; once only 36 while resting in bed; basal metabolic rate minus 29 per cent, reflexes sluggish. Red blood cells 5,940,000, white cells 6,400, small lymphocytes increased 45 per cent, hæmoglobin 75 per cent. Menses suppressed—appeared only once shortly

FIG. 1

after arrival in Canada, and not since. The urinary output could not be determined on account of the low mentality of the patient. The urine contained albumin but no casts or blood. Wassermann test was negative. Fundi of eyes normal. February 6, 1926, x-ray of skull showed the sella turcica to be normal in size and shape. Clinoid processes rather massive. February 9th, x-ray taken of limbs shows bony structures of hands and feet normal.

Blood chemistry.—Urea nitrogen 16.2 mg. per 100 c.c. whole blood, creatinine 1.5, cholesterol 206, and calcium 13.2 mg. per 100 c.c. serum. (Cholesterol and blood serum calcium are therefore rather high).

She was put on a fully balanced diet, and started on one grain of desiccated thyroid gland per day, increasing after a few days to three grains per day, and later to six grains per day. On February 10th, the basal metabolic rate was −16 per cent, on February 16th −17 per cent, on February 23rd +42 per cent, and February 24th +50 per cent, but these two later tests were unsatisfactory as she would not keep quiet during their performance. Thyroid was discontinued from February 24th to March 4th. On this date two grains of thyroid were given daily, and on March 13th this was increased to three grains per day. Basal metabolic rate on March 1st was −3 per cent, March 9th −12 per cent, March 18th −3 per cent. During the first four weeks of thyroid treatment the cholesterol and blood serum calcium gradually came within normal limits. February 3rd, blood serum calcium 13.2 mg. per 100 c.c. blood serum, February 6th, 12.1, February 15th, 11.9, February 22nd, 10.1, March 1st, 9.5. The urine output became normal. Albumin disappeared from the urine and has not reappeared. Is the reversion of the serum calcium to normal due to a mechanical lowering of the blood supply to the thyroparathyroid apparatus following thyroid feeding as Cameron[7] has suggested?

FIG. 2

On March 18th she was given ward duties. Her appearance at this time is shown in Fig. 2.

From March 18th to May 12th there was nothing to note. Basal metabolism was kept round normal with thyroid extract. She gained nineteen lbs., seemed brighter and more talkative. At this stage (May 12th), the thyroid extract (grains two per day) which she had been taking was discontinued, as the basal metabolic rate was +14 per cent, weight 100 lbs. For the next few weeks a most unusual and interesting condition followed. A high basal metabolic rate developed with a rapid increase in weight, which was not due to œdema, but a general filling out of the tissue with no definite clinical symptoms of hyperthyroidism present. She was on the same diet, continued her ward duties as usual, was quite active and enjoyed her work. The following is a record of her basal metabolism and weight: May 12th, basal metabolic rate +14 per cent; weight 100 lbs.; May 19th, basal metabolic rate +37 per cent; weight 107 ibs.; May 25th, basal metabolic rate +66 per cent; weight 119 lbs.; May 30th, basal metabolic rate +65 per cent; weight 135 lbs.

Thus, in eighteen days her basal metabolic rate had increased 51 per cent, and her weight by thirty-five lbs.

During the next twenty-eight days her basal metabolic rate decreased to +24 per cent, and

there was a gain of seventeen lbs., making her weight 152 lbs. On July 7th her basal metabolic rate had decreased to +12 per cent, and her weight remained the same. Her appearance on July 18th is shown in Fig. 3.

FIG. 3

On account of these extraordinary changes, examination of the fundi of the eyes, x-ray of the sella turcica and limbs were repeated on June 1st to note if there had been any change in the pituitary gland since last examination. Results were negative.

Thus thyroid extract converted a living skeleton into a robust and even obese woman. Why, on discontinuance of the extract there occurred a development of high basal metabolic rate, with simultaneously, an increase in body weight to the point of obesity, I cannot say, but it is evident the patient's thyroid gland has become quite active. It is impossible to forecast its future behaviour.

It must not be forgotten that Benedict[8] has emphasized the factor of nutrition in basal metabolism values, so that the initial low rate with this girl may have been exaggerated by a previously existing state of malnutrition, while the final high values may have been similarly, but oppositely, exaggerated by the hearty appetite which developed following the thyroid feeding.

In case 2, when sufficient parathyroid extract (Collip) was given to bring about and maintain normal blood serum calcium, the œdema rapidly disappeared.

According to Collip[9], parathyroid extract given in excessive doses to dogs brings about a hypercalcæmia with depletion of body fluids.

In case 3, there was initially high blood serum calcium with emaciation, a picture which can be experimentally produced by excessive dosage of parathyroid hormone. Are we justified in assuming in this case an over activity of the parathyroids whereby the clinical picture of myxœdema, which we are accustomed to associate with hypothyroidism, is changed to one of emaciation?

The following is a brief summary of the three cases:

Case 1.—Nephrosis with mild hypothyroidism, greatly benefitted by thyroid treatment, relapse after ceasing treatment and finally apparent spontaneous cure.

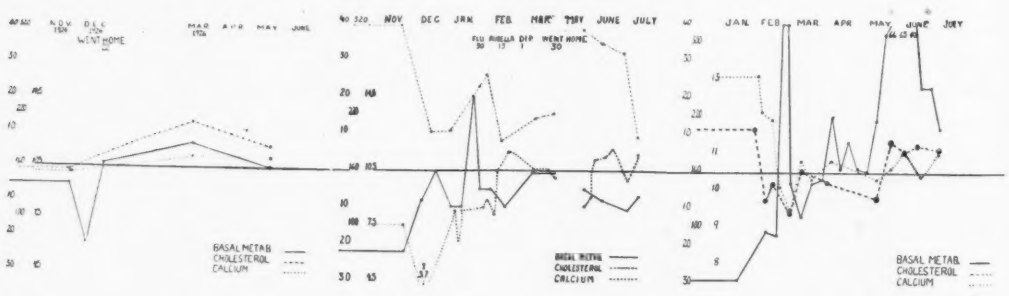

FIG. 4.—Chemical findings of Case 1 (A). Case 2 (B). Case 3 (C).

Case 2.—Nephrosis with marked hypothyroidism and hypoparathyroidism, greatly benefitted by administration of desiccated thyroid and Collip's parathyroid extract, but dying of intercurrent infection. Clinical diagnosis confirmed by post mortem findings.

Case 3.—Nephrosis with hypothyroidism and apparent hyperparathyroidism, benefitted by thyroid treatment.

The chief chemical findings of these cases are shown graphically in Fig. 4.

Another type of nephrosis is that associated with pregnancy, where there has been no previous renal disturbance. It is an accepted fact that the activity of the thyroid gland is increased in pregnancy. The gradually increasing metabolic exchange during pregnancy makes extra demands on the thyroid gland. If through faulty development, disturbance of nerve or blood supply or infection, the thyroid is not equal to the demands made upon it, a disturbed metabolic condition results, with symptoms, abnormal urine and blood findings similar to those in the cases of nephrosis above described. Coetzee[10] has shown that the blood albumin-globulin ratio in pregnancy tends to be changed in the same way as in the cases I have described, while Bunker and Mundell[11] have shown that blood cholesterol in pregnancy gradually increases to maximum normal or even higher towards the end of term. Here small doses of thyroid may be of value in the later stages of pregnancy in those cases whose thyroid function is limited, because as soon as the extra load of metabolic activity is relieved by labour at end of term or by induction of labour at an earlier period, all symptoms disappear and the patients, with few exceptions, make rapid and complete recoveries.

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Coronary Occlusion.—McKeen contends that coronary occlusion is not a rare disease in general practice. The diagnosis is generally easy, the treatment is plainly indicated, and the prognosis is fairly hopeful. From the standpoint of treatment, it is highly important to distinguish it from the different acute affections of the upper abdominal quadrant, and from those doubtful conditions often described in the newspapers as "acute indigestion" and "ptomaine poisoning." The picture of a typical case should be kept clearly in mind. A man in about middle life is suddenly stricken, perhaps in his sleep, with an intense substernal or epigastric pain that lasts and is not relieved by nitrites or even by ordinary doses of morphine. Signs of grave shock are present, anxious facies, ashy colour, clammy skin and rapid, feeble pulse. The heart sounds may be irregular or ticktack in quality. A pericardial rub is sometimes found, and is then pathognomonic. The blood pressure is comparatively low, and, if previous readings are known, a decided drop has evidently occurred. The temperature will probably be found elevated, and the leukocytes are increased. A patient with such symptoms should be put to bed, and made as comfortable as possible with opiates. If the insult to the heart is not too great, he may survive the immediate shock. If he is kept absolutely quiet in bed for at least six weeks, with good nursing care, the infarct is given the best chance to heal, and the patient the best chance to recover. Moreover, if he has been a sufferer from chronic angina and hypertension, he may be relieved from both by his coronary occlusion.—*Boston Med. & Surg. Jour.*, May 6, 1926.

XUM

CHRONIC MASTITIS*

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As a result of our efforts to educate the public to the danger of lumps in the breast a new problem has arisen. The classical picture of carcinoma of the breast in an advanced state is still much too frequent, but women are on the *qui vive*, and we are now often consulted regarding breast conditions which present a very indefinite picture. Many of these conditions are pathological and many of them are not. Many of them represent definite lesions at an early stage when prompt recognition and radical treatment will probably save the patient's life. The subject of our paper covers a great many of them, and the treatment of this condition is not always surgical.

The most important prognostic sign in carcinoma of the breast is the length of time the patient has had the disease. Education of the public has saved many lives by sending us cases of carcinoma in which the tumour is very recent. Let us continue this education by every means in our power, but let us also realize the fact that we are now seeing many women with lumpy breasts, painful breasts and those showing normal signs of physiological regression, changes peculiar to sexual organs, the prostate and uterus as well as the breast; these do not require operation. Mastectomy is seldom indicated in such cases, and I have long since reached the conclusion that the operation is becoming altogether too popular. In going through my own records I find quite a number of such cases which were not operated upon. The cases of painful breasts and some of the lumpy breasts were mostly relieved by simple measures, together with the assurance that they did not have carcinoma. Several cases had already been advised to have mastectomy performed.

Difference of opinion is not very common among either surgeons or pathologists when we are dealing with carcinoma of the breast in a reasonably advanced state. The disease asserts itself quite early. The same cannot be said about the benign lesions and it appears to me that *most of our difficulty is wrapped up in the condition which is popularly called chronic mastitis.* The indefinite picture and the fear of carcinoma has accounted for the sacrifice of many a mammary gland.

The female breast is a restless organ. Even before the child is born the gland is stimulated by the hormone which stimulates lactation in the mother. The swollen, discharging mammary gland in new-born babies, both male and female, is of frequent occurrence. By the time puberty is reached the gland has atrophied in the male, and remains dormant throughout life unless awakened by some neoplastic or other pathological process. With the establishment of menstruation in the female, the breast receives the natural stimulation of the gonadal secretion. From the structure of a modified sweat gland containing a few ducts the loose connective tissue is gradually replaced by acini, and more ducts, until the *epithelial secreting surface* is by far the most important histological element. Fullness of the breasts and secretion from the nipples is frequently observed during the menstrual period. In the event of pregnancy the secreting element in the breast is still further developed. Lactation follows with its period of activity and subsequent regression. At the menopause the breast is robbed of its stimulating influences and normal atrophy takes place. The ducts and acini are replaced by fibrous tissue and the contour of the breast is largely maintained by adipose tissue in the connective tissue framework. *These physiological changes constantly going on account for the irregularities in the histological structure of apparently normal breasts. The border line between normal epithelial hyperplasias in the female breast and definite pathological changes is very narrow.*

Chronic mastitis is an abnormal epithelial

* Read at annual meeting Canadian Medical Association, Victoria, 1926.

hyperplasia of the breast. The title of our paper is justified by popular usage but it appears to me that the latter name would be open to much less criticism. The study of epithelial hyperplasias of the breast has been especially interesting. After we have disposed of the normal hyperplasias involving both the parenchyma and the stroma we are faced with the bizarre pictures of what is apparently the same process, largely affecting the *lining epithelium of the ducts and acini.* The epithelial cells depart from their regular shape and size and pile up at an excessive rate. They show proliferation into the distended lumen of the ducts, and some of them apparently proliferate beyond the lumen. Round celled infiltration into the surrounding stroma is a common accompaniment. This is the condition which Ewing[1] calls precancerous. He makes the statement that in his material about 50 per cent of the breasts excised for cystic disease show pronounced precancerous changes or miniature carcinomas. This sounds like a very sweeping statement, but we must remember that Ewing was dealing entirely with breasts which some surgeon had considered sufficiently pathological to require removal. The statement would not apply to chronic mastitis in general.

Sir George Lenthal Cheatle[2] in his study of the condition reaches the following conclusions:

1. There is a definite sequence of events in the epithelial changes of the breast that end in cancer.

2. The epithelial changes described have a common origin: the acini and terminal ducts.

3. The chain of events may be interrupted at any point. The pressure may remain latent or disappear.

4. The process begins as a desquamative epithelial hyperplasia, and passes on to a hyperplasia which is not desquamative—a dysgenetic epithelial hyperplasia. Included in the latter are the following changes.

a—Condition of the epithelial cells is normal, but papillomata are produced which are confined within the terminal ducts and acini.

b—An epithelial hyperplasia in which the individual cells show signs of malignancy: such as variation in size, mitosis, nuclear hyperchromatosis and yet the process is confined within the ducts and acini. This is the precancerous state.

c—A more advanced condition in which the cells have extended beyond the walls of the ducts and acini and invaded the surrounding tissues.

5. One or more of these epithelial changes, especially the precancerous state, is found in the centre of fully developed carcinoma.

6. The events described in the breast are identical in time and sequence with those occurring in the skins of man and mice after the application of tar.

We well know that the epithelial hyperplasias produced by tar do not all develop into cancer. They may reach what has been called the precancerous state and then disappear. Either local or general conditions may not be favourable to the growth of carcinoma.

Oertel,[3] in comparing the epithelial hyperplasias of the breast and prostate with those experimentally induced, states that the position of the pathological institute of McGill University is as follows: "Years ago when we first had our attention drawn to these conditions we diagnosed them as early carcinoma. We have since examined breasts and prostates from all sources and all sorts of cases and have found these carcinoid changes so common during the regressive periods of life that we now hesitate to report them as carcinoma. If we did the majority of these organs would show in one or another place some stage of carcinoma development. These changes are potentially carcinoma but they do not always develop into carcinoma."

Bloodgood[4] has made an exhaustive study of 350 cases of chronic mastitis at Johns Hopkins Hospital. Two hundred and twenty-two of the breasts had been removed for this condition, Not one of them showed any evidence of carcinoma from a gross or microscopic standpoint. He concludes that chronic mastitis *is not a precancerous condition* and with rare exceptions the breast should not be removed. Carcinoma developed in three out of the 128 cases where the tumour only had been removed and the breast saved. This incidence of carcinoma in cases of chronic mastitis is no greater than the normal incidence of carcinoma in women of the same age. Bloodgood says: "We have never observed cancer in diffuse cystic disease of the breast. This confirms the observations of Billroth, Velpeau and others. In a large number of breasts removed for cancer we noticed increased parenchyma in adenomatous areas, a few minute cysts and one or more dilated ducts, but this condition of

the breast had presented no clinical symptoms. We have submitted sections of *every type of chronic cystic mastitis* to more than forty consulting pathologists. In the majority of cases there was disagreement. There was no disagreement on two cases which showed fully developed carcinoma. Where pathologists disagree on breast lesions in relation to cancer, the patients live; where there is agreement for carcinoma, the patients show a large percentage of deaths from carcinoma."

What then is the nature of the clinical entity which we call chronic mastitis? If the condition were bacterial we would surely see an acute inflammatory process develop at times, and there has been no association or relation established between acute pyogenic mastitis and the chronic condition which we are discussing. The term abnormal involution has been used to describe the condition, but the main histological changes in involution are those of atrophy and replacement of acini and ducts by fibrous tissue, whereas the main histological changes in the subject of our paper are those of dilatation of ducts and acini, epithelial hyperplasias, the formation of papillomata within the ducts and round-celled infiltration.

One of the most plausible explanations of the condition which I have yet seen is described in a study by Geoffrey Keynes,[5] which was made the subject of the Hunterian lecture before the Royal College of Surgeons in London, some three years ago. After a minute investigation of a large number of pathological and supposedly normal breasts his conclusions were as follows:

1. The normal non-lactating breast has no outlet through the nipple for discharge of secretion. Secretion must therefore be balanced by re-absorption.

2. Chronic mastitis is manifested by dilatation of ducts and acini, accumulation in them of products of epithelial activity, infiltration with lymphocytes, fibrosis and epithelial changes. Distribution of all these is quite erratic.

3. Chronic mastitis is most common in women, but occurs also in men. It may appear in the second decade but is most often seen in the fifth. It appears earlier in nulliparous women.

4. It is not bacterial in origin, nor is it toxæmic or traumatic, and it is not related to involution changes in the breast.

5. Its cause is probably to be found in chemical irritation due to stagnating secretions and epithelial débris. This cannot be proved, until the chemical changes have been investigated

6. It is the underlying cause of many lesions usually described as clinical entities such as simple cyst, papillomatous cyst and galactocele.

7. Chronic mastitis though often associated with carcinoma has not been proved to be precancerous. Both may be due to the same cause.

8. In advanced stages it must be treated by operation. In the earlier stage by natural drainage; that is endeavouring to free the mouths of the ducts by removal of the keratinized epithelial plugs which are normally present in the non-lactating breast.

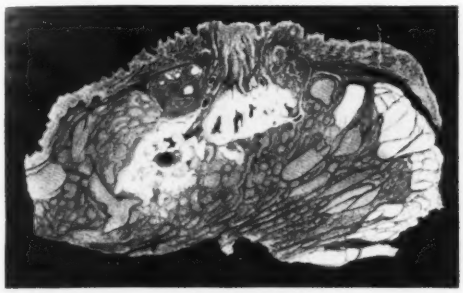
Professor Bullard of the department of pathology, University of Western Ontario has been able to show me plugging of the ducts of the nipple in the non-lactating breast in several speciments, and I shall show you some very convincing slides from Geoffrey Keynes' work.

Transverse section (paraffin) of the mouth of a duct, showing the laminated epithelial plug in position. (× 100).

The clinical picture presented by chronic mastitis is variable. The following working clinical classification has served me well:

1. Painful, lumpy breast or breasts, without definite tumour mass.

2. The breast with one localized definite tumour mass which may be clinically benign, doubtful, associated with a discharge from the nipple or frankly malignant.



Acute stagnation mastitis in a breast already the seat of chronic mastitis. Inspissated milk can be seen apparently infiltrating the tissues in the centre, and all the ducts and acini are distended with secretion. The nipple is retracted.

Section of the nipple of a lactating breast, showing the mouth of the duct opened up and the epithelial plug dislodged.

3. The breast with several definite tumour masses.

The first group represents the cases which I have in mind when I say that many of the patients who come to us with breast symptoms have no pathological lesion and do not require operation. The symptoms are frequently bilateral. As a rule, pain is the most outstanding symptom; the patient has often discovered a supposed lump in her breast by picking up a portion of the gland between her thumb and finger. Hyperplastic enlargement of the nodes in the axilla is a frequent accompaniment of this condition and they are often painful, so that the patient may be aware of their presence. The condition may occur at any age but is most frequent in the third and fourth decades. A careful, painstaking examination is indicated. We are facing a grave responsibility. Is there a definite tumour mass in the breast? If so, *and the mass is single,* the patient requires an operation, either a very small one or a very radical one. If there are multiple definite masses in the breast the case is either advanced carcinoma, and will present a classical picture, or it is a benign condition which may or may not require an operation.

Longitudinal section of a duct mouth, into which two collecting ducts open, one being distended with secretion. The epithelial plug is shown in relation to the squamous-celled lining of the mouth. (× 20).

Not long ago Bloodgood[4] at Johns Hopkins Hospital reported that in one series of 129 cases who presented themselves with tumour of the breast—many of them sent by their doctor—sixty-one had no tumour at all. Proper examination then is important.

The patient should be placed lying down in a good light with both breasts exposed and the hands clasped over the head. This position permits of thorough inspection and comparison of both sides as to size, contour, deformity of nipple or breast, or presence of a

visible lump. The breasts should be palpated with the fingers flat against the ribs, passing every portion of the gland beneath the fingers, and leaving the nipple region until the last. By this method it should not be difficult to detect or to eliminate the presence of even very small definite masses. Many normal breasts will present lumps if portions of the breast are palpated between the thumb and fingers. For palpation of the axillary regions the hands should be brought down until the patient's arm presses upon the examining fingers. This move relaxes the axillary fascia to which the nodes are attached. *If no definite tumour mass is palpated and the patient is assured that she is not suffering from cancer* our experience as already stated is that the pain is usually much relieved. That is, if the patient has sufficient confidence in our ability to believe what we tell her. Many of these cases travel from one doctor to another and in the end find somebody who may be persuaded to remove the breast. That even the ill advised mastectomy does not relieve the pain in such cases is well borne out by the frequency with which one sees these patients with the same symptoms referred to the remaining breast. I have seen a few patients who have had both breasts removed and they now have the pain in the axillary nodes together with a well developed "cancer phobia."

I have had excellent results in the treatment of such cases with massage and olive oil followed by a wet boric acid dressing applied to the nipple. The success which I have had with this method can be readily understood if Geoffrey Keynes' explanation of chronic mastitis be correct. It seems logical that the ducts of the nipple in the non-lactating breast might be sealed with keratinized epithelium. If they were not protected in some manner, then acute infections of the non-lactating breast would surely be very common instead of extremely rare.

The following extracts from the case histories of patients in my own practice have been selected to illustrate this group:

No. 228.—Mrs. P., age thirty-nine. Complains of swelling and soreness in the right breast. Numerous hard, tender ridges felt throughout breast but no definite tumour mass. Massage and wet dressings. Relieved, with no recurrence of symptoms in five and one half years.

No. 904.—Mrs. B., age thirty-four. Complains of lump in breast; whole breast feels sore. Both breasts feel harder and more dense than normal but no definite tumour mass is palpable. Palpable nodes in both axillæ. Massage and wet dressings. Complete relief of symptoms with no recurrence in three years. Had been advised by a doctor to have mastectomy.

No. 1254.—Mrs. P., age thirty-three. Complains of painful breast with tender lump. Breast feels hard; can map out its edge; palpable axillary nodes. No definite mass in breast. Treatment as above. Relief and no recurrence in one year.

No. 1349.—Mrs. S., age thirty-two. Complains of painful breast with tender lump. Can feel thickening of areolæ about nipple. Palpable axillary nodes on both sides. No definite mass. Usual treatment. Thickening had disappeared in one week. No recurrence in six months. Had been advised to have mastectomy.*

In the second group there is a palpable localized tumour mass. It is generally agreed that the indigenous benign tumours of the breast are associated with chronic mastitis. Their pathology is part and parcel of the same process. Thus, simple cyst, galactocele and localized fibro-cyst adenoma are in reality local manifestations of chronic mastitis. The same may be said of the papillomatous cyst which is a benign lesion, frequently giving rise to a bloody discharge from the nipple. If we have satisfied ourselves that the breast contains a definite tumour mass it may be one of the local manifestations of chronic mastitis, a non-indigenous or simple connective tissue tumour or carcinoma.

Is it benign or malignant? This is the important question. The earliest sign of distinction between a malignant and a benign tumour is its relation to the surrounding tissues. Infiltration is a constant characteristic of carcinoma and its attachment to the surrounding tissues is not difficult to demonstrate in the breast, even in the very early stages. If the carcinoma is superficial, a point of fixity to the skin through the underlying fascia is readily recognized. If near the nipple, the pull on the fascia produces early deformity. If deeply situated in the breast we must depend upon our ability to distinguish between a freely movable tumour mass and one which has formed some measure of attachment to the surrounding tissues. The question of fixity is sometimes easily settled but we are often in doubt as to the nature of the tumour until we

* Two further cases are omitted as they illustrate similar conditions.—Ed.

have *made the incision and studied the pathology on the spot.* If we can satisfy ourselves that we are dealing with a localized tumour which is not infiltrating the surrounding tissues, or if we can recognize it as one of the local manifestations of chronic mastitis, then local removal is sufficient. The inclusion of a wedge of surrounding breast tissue is better practice than simply shelling out the tumour. The contour of the breast is readily restored by two or three catgut sutures bringing together the broad edge of the wedge. If we recognize the gross pathology of cancer we should be prepared to do the big radical operation for cancer at once in the most thorough-going manner possible. Our opportunity to cure this disease is confined to such early cases. If the pathology is doubtful frozen section may help us, but we must not overlook the fact that the pathologist is confined to a small piece of tissue in rapid section whereas the surgeon has the entire picture before him. Reasonable doubt as to the pathology of the mass calls for the radical operation. Simple mastectomy is a very incomplete operation for carcinoma and is not in the best interests of the patient. The patient with a benign localized lesion should not be mutilated by mastectomy.

A number of my cases are of this type. Of them the following will serve as illustrative of the condition:

No. 1086.—Mrs. F., age thirty. Complains of lump in breast. No pain or tenderness. Has a freely movable definite tumour; remainder of breast rather dense. Local excision including sector of breast. No recurrence in two years. Cystic adenoma.

No. 894.—Miss S., age twenty-six. Complains of lump in breast. Has a definite movable tumour. Local excision with sector of breast. Fibro-cystic adenoma. No recurrence in three years.*

These lesions were all localized evidences of chronic mastitis.

The third clinical group presenting several definite tumour masses represents the patients who require careful observation. Deaver says that an exaggerated fear of carcinoma after abnormal involution, which he chooses to call the condition under discussion, has led to an unnecessary mutilation of patients by the removal of many breasts which show no important disease. I am not at all satisfied that chronic mastitis is precancerous but the question is a contentious one with good argument on both sides. *While the pathologists are endeavouring to place us upon firm ground my own rule has been to regard this group with suspicion.* If the masses are getting larger or show a tendency to mat together, in spite of the simple measures of which we have already spoken, my own opinion is that the breast should be removed. Such glands are usually honeycombed with cysts and the function has already been destroyed. If we confine the indications for mastectomy to the progressive cases in this group there will be little unnecessary sacrifice of mammary glands and our patients' interests will be well cared for.

In another group of cases I decided upon simple mastectomy *after exploration of the condition present.* The changes were not malignant but the breasts were fare from normal and the changes were progressive.

No. 372.—Miss M., age thirty-seven. Complains of painful lumps in breast. Right breast considerably larger than left. Has several definite masses, *freely movable.* Re-examination in one month shows growth of masses in spite of massage and wet dressings. Mastectomy. Diffuse chronic mastitis.

No. 1281.—Mrs. Q., age forty-two. Complains of painful lumps in breast. Several hard masses palpated, *partly matted together.* Axillary nodes palpable. Mastectomy. Diffuse chronic mastitis.*

These cases might never have become malignant but I believe that they are fair examples of the cases referred to in this paper which we consider safer after having had mastectomy.

Conclusions

1. Many cases of chronic mastitis will respond to simple measures, and operative treatment is not justified unless *one or more definite* tumour masses are palpable.

2. The palpation of a single, definite tumour mass in the breast is an indication for operation if it shows itself to be of a permanent nature. (We have not touched upon the transitory, disappearing cyst which is sometimes seen in young women). Localized excision is sufficient if we are satisfied that the tumour is benign. The radical operation is indicated if the lesion exhibits the gross characteristics of carcinoma. In cases of reasonable doubt, *after close examination of the relations of the tumour to the sur-*

* The four other cases are omitted as they illustrate similar conditions.—Ed.

rounding tissues, the radical operation should be performed.

3. We have been too ready to perform mastectomy for chronic mastitis: operative indication should be confined to the third clinical group showing multiple definite masses and then only when the condition is progressive.

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ALLERGIC DISEASES OF CHILDHOOD*

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THE term allergic was first used by von Pirquet to denote a heightened sensitization to tuberculin (a bacterial protein) in individuals previously sensitized by the tubercle bacillus.

The phenomenon of anaphylaxis was discovered by Richet, and the term indicates a condition (the opposite of prophylaxis) characterized by shock in animals who, previously sensitized to a foreign protein, are later given a second dose of the same protein. This shock phenomenon bears striking resemblances to the conditions found during attacks of asthma.

Schloss first pointed out the significance of protein skin tests in the diagnosis of infantile eczema. Walker proved the allergic basis of a group of diseases of which asthma is the outstanding example. In a study of four hundred cases of asthma[1] he found that 35 per cent had their first attack during childhood and of these 70 per cent gave positive skin reactions. Only 39 per cent of these, whose attacks began in adult life, gave positive skin reactions, and those whose attacks began after the age of fifty were all negative to skin tests.

This report is a study of seventy-seven children who presented symptoms of protein sensitization. Of these fifty-seven were capable of more or less accurate diagnosis, and twenty were not completely diagnosed for various reasons.

The material consisted of five breast fed babies suffering from eczema, in all of whom treatment was successful; twenty-seven cases of eczema in artificially fed children, in twenty-one of whom treatment was successful and six unsuccessful; twelve cases of asthma, nine of whom were relieved, three were not relieved; three cases of combined eczema and asthma, all successful; sixteen cases of chronic upper respiratory tract infection; treatment in eleven successful, and in five unsuccessful; four hay fever cases, all cured; three cases of cyclic vomiting, in one treatment successful; two cases of urticaria in one successful, and one unsuccessful; in five cases which were thought to be examples of allergic disease, but which later turned out to be non-allergic cases, treatment was unsuccessful.

The importance of a complete history when obtainable is very great. A family history suggestive of allergic heredity was obtainable in 40 per cent of the cases here cited.

Complete skin tests with all proteins which may have any bearing on the case are necessary, if uniformly successful results are to be expected. The following proteins have been used in this pædiatric work: twelve cereals, twenty-two fruits, twenty-eight vegetables, five meats, three fowls, six fish, four milk, three egg, five nuts, four furs, nine bacterial proteins, twelve epidermals, fourteen incidentals and twenty-seven pollens.

Multiple sensitization is the rule in children. Removal of the chief offender will often improve the condition, but secondary offenders, if any, must be removed as well if a complete

* Read at the fourth annual meeting of the Canadian Society for the Study of Diseases of Children, Gananoque, Ont., June 11, 1926.

cure is to follow. The technique consists in making scratches one-eighth inch long with a hypodermic needle not sufficiently deep to draw blood. Proteins must be kept in a moist state for at least thirty minutes. This necessitates remoistening each test at least twice. In this series a one plus reaction is one which gave a raised white ring a quarter inch in diameter.*

In all the case histories, which follow, complete skin tests were made.

Case Reports

Group 1. A. *Eczema. Breast Fed.*

Case No. 2.—Female, aged six months, suffering from facial eczema of two months duration, exclusively breast fed, gave the following positive reactions: casein 6+, lactalbumin 4+, egg white 6+, silk 2+, strawberry 2+. Cows milk accidently dropped on the child's lips produced local urticaria. Removal of offending foodstuffs from mother's diet, and silk from contract with child's skin was followed by complete cure in four days. At eight months the child was weaned and given a thick formula consisting of cream, water, sugar and cream of wheat. The eczema did not recur.

Case No. 4.—Male, aged four and a half months, breast fed, suffering from generalized eczema of one month duration gave the following positive reactions: egg white 4+, egg yolk 2+, salmon 3+, cheese 2+, duck feathers 2+, sheep's wool 2+, chicken feathers 2+, corn 1+, oats 1+, raspberries 1+, beets 1+. Three weeks after these proteins had been removed from mother's diet the child's eczema had completely disappeared.

Case No. 5.—Male, aged five months, breast fed, suffering from generalized eczema of one month duration, gave the following positive reactions: casein 5+, lactalbumin 5+, cheese 3+, cat hair 4+, goose feathers 4+, chicken feathers 3+, duck feathers 2+, wheat whole 3+, orange 3+, beef 2+, celery 1+, egg white 1+. Seven weeks after these proteins were removed from dietary of and contact with mother the child's skin was normal and healthy.

Group 1. B. *Eczema. Artificially Fed.*

The following cases of eczema in artificially fed infants are of interest:

Case No. 7.—Female, aged ten months, weaned at nine months, gave the following positive reactions: egg white 5+, egg yolk 3+, silk 3+, kapok 2+, orris root 1+, asparagus 3+, string beans 2+, chicken feathers 3+, duck feathers 1+, rice 2+, banana 2+. At one year the child's skin was normal. This patient is now undergoing desensitization with egg. The first dose was one minim of 1:10,000 solution. The type of reaction is shown in the following photograph, Fig. No. 1.

Fig. 1

Case No. 9.—Female, aged one and a half years, had suffered from chronic generalized eczema for fifteen months, gave the following positive reactions: silk 5+, dust 2+, egg white 4+, egg yolk 1+, human hair (white) 3+, cat hair 2+, duck feathers 2+, goat hair 2+, chicken feathers 1+, carrot 3+, cabbage 2+, pea 2+, onion 1+, mustard 1+, radish 1+, grapefruit 2+, grape 2+, raisin 2+, lake trout 2+, cheese 2+, lamb 2+. Silk clothing had been substituted for wool at the age of six weeks. This appeared to be the reason for previous failure. Removal of offending proteins was followed by prompt disappearance of the rash. A severe attack of asthma followed shortly after the arrival of a new nursery maid who suffered from dandruff. The attack, which was not characteristic, was intensely aggravated by the use of mustard as a poultice. This is a good example of how occasionally after the end of the second year eczema merges into asthma.

Case No. 12.—Male, aged seventeen months, suffering from eczema which began while the child was breast fed at a time when the mother was eating a large quantity of raw fruit, gave the following positive reactions: peach 6+,

* The proteins used were prepared by the Arlington Chemical Company of Yonkers, N.Y.

cherry 4+, apricot 2+, grape 2+, prune 2+, banana 1+, oat 3+, barley 1+, horse dander 2+, sheep's wool 1+, egg white 2+, potato 1+, silk 1+. Removal of offending substances was followed by prompt cure.

Case No. 14.—Male, aged fourteen months, gave the following positive reactions: egg white 4+, egg yolk 4+, orris root 3+, cotton seed 2+, silk 2+, wheat whole 3+, oat 1+, goose feathers 2+, sheep's wool 2+, lactalbumin 2+, potato 1+, spinach 1+, pork 1+. This child was under the writer's care in an institution from birth, was tested at the age of six months, and completely relieved by removal of offending proteins. The feeding of one teaspoonful of yolk of egg daily at fourteen months was promptly followed by recurrence of eczema and intense generalized furunculosis, which disappeared promptly when egg was again removed.

Case No. 16.—Female, aged eleven years, who had suffered from chronic eczema of the hands and flexures of the elbows and knees for nine years, gave the following positive reactions: horse dander 4+, sheep's wool 3+, cat hair 2+, dog hair 2+, grapefruit 2+, grape 1+, raspberry 1+, cocoa 2+, veal 1+, salmon 1+. Horse dander, although the chief offender, was not a factor in this case. The woollen underwear was the cause of the eczema in the flexures. A pet cat had been a constant playmate from the time the eczema began. Removal of the cat and woollen underwear was followed by complete cure in one month. There has been no recurrence.

Case No. 17.—Fig. No. 2.

FIG. 2

The above photograph illustrates an eczematous area on the hand of an eight and a half year old girl who had suffered from this condition for five and a half years. There were six such areas on the arms. The following positive reactions were obtained: human hair 3+, silk floss 2+, silk 2+, celery 1+, lettuce 1+. There was a shocking amount of dandruff in the mother's scalp. The child had moderate dandruff. Mother and child slept together every second week during father's absence. Child uses mother's brushes. Local treatment of the scalp and the carrying out of treatment suggested by the skin tests was followed by rapid and complete cure. The following photograph, Fig. No. 3, shows type of reaction obtained.

FIG. 3

Case No. 21.—Male, Hebrew infant of eleven months, who had suffered from generalized eczema for three months, gave the following positive reactions: barley 3+, rice 2+, wheat whole 1+, pyrethrum 3+, cotton seed 2+, orris root 1+, grape 1+, tomato 1+, beef 1+. The eczema followed the return of a borrowed baby carriage, which had to be treated with insect powder. The cause was apparently pyrethrum, which is the basis of insect powder. The carriage was discarded and the eczema disappeared promptly in five days without other treatment.

Case No. 26.—Male infant, aged nine months, who had suffered from facial eczema for six months, gave the following positive reactions: human hair (white) 2+, goat hair 1+, silk 2+, silk floss 1+, corn 2+, egg yolk 1+. A cure followed the removal of offending proteins and the nursery maid who had much dandruff. When the child's face actually comes in contact with silk the skin immediately becomes red and angry. and the mother has no doubt that the chief cause of the trouble was silk.

GROUP 2. *Asthma.*

Case No. 27.—Female, aged five years, daughter of a coal dealer who keeps twenty-eight horses stabled in his backyard, gave the following positive reactions. cocklebur 5+, lambs quarters 4+, oak 3+, timothy 3+, black walnut 2+, cotton wood 2+, horse dander 5+, dog hair 3+, duck feathers 1+, orris root 3+. The first attack of asthma was wrongly diagnosed as bronchopneumonia. Removal of the dog and desensitization with horse dander, beginning with one minim of 1:10,000 solution, has been followed by complete relief. The final desensitizing dose was twelve minims of 1:500 solution. There was only one slight reaction during desensitization.

Case No. 28.—Male, aged eight years, asthma for two years, gave the following positive reactions: horse dander 3+, duck feathers 2+, goose feathers 2+, chicken feathers 1+, dog hair 1+, giant ragweed 2+, short ragweed 2+, lambs quarters 2+, annual salt bush 2+, pea 2+, cabbage 1+, raspberry 1+, halibut 1+. The child's window overlooked a stable. He changed his residence and was desensitized with ragweed and has been free from any respiratory disorders during the past eighteen months.

Case No. 31.—Female, aged six years, who had suffered from asthma for four years, interspersed by many attacks of bronchitis, gave the following positive reactions: potato 6+, sweet potato 4+, radish 3+, cauliflower 2+, parsnip 2+, squash 2+, string bean 2+, turnip 2+, cucumber 1+, lettuce 1+, lima bean 1+, mustard 1+, pepper (black) 1+, chicken feathers 3+, duck feathers 3+, cat hair 2+, cattle hair 2+, horse dander 1+, buckwheat 3+, corn 3+, orange 3+, pineapple 2+, ginger 2+, apricot 1+, banana 1+, raspberry 1+, strawberry 1+, mink 1+, orris root 1+. Her attacks of asthma were always promptly relieved by vomiting. In this case vegetables were the chief offenders. Correction of diet has been followed by complete relief. There was a gain of six pounds in three months. The child has been free from even head colds and during a recent epidemic of influenza was the only one in the family to escape. After six months retests showed absolutely no change in the skin reactions. After one year the sister played with a cat all day. Undressed in patient's room. An attack of asthma followed during the night.

Case No. 34.—Male, aged nine years, a farmer's son. If the mother takes an aspirin tablet the pulse becomes slow and weak and she is confined to bed for three days. If she attempts to sit up she faints. The child has had constant severe attacks of asthma, and repeated attacks of bronchitis for six years. The mother suspects horses and apples, especially sweating horses. The following positive reactions were obtained: horse serum 5+, kapok 3+, horse dander 4+, cattle hair 2+, dog hair 2+, cat hair 1+, goat hair 1+, apple 4+, tomato 2+, rhubarb 1+, strawberry 1+, celery 3+, cauliflower 2+, sweet potato 2+, turnip 2+, asparagus 1+, bean 1+, cabbage 1+, lentil 1+, onion 1+, pea 1+, pumpkin 1+, spinach 1+, corn 1+, wheat whole 1+, turkey 1+, egg white 1+. The writer advised giving apple before skin tests were made and this was promptly followed by an attack of asthma. This patient gave the following positive reactions to horse dander treatment set: 1:100,000 solution 1+, 1:10,000 solution 3+, 1:1,000 solution 5+, 1:500 solution 6+. Desensitization was commenced with one minim of 1:1,000,000 solution. There were six severe reactions during the course of treatment, which occupied a period of six months. It is possible that this child might have had a fatal reaction had he received diphtheria antitoxin. There have been no attacks of asthma since desensitization was commenced except a mild attack on February 7th, apparently due to putting on an old seal skin cap. Skin tests two weeks later gave a two plus reaction to this fur.

Case No. 36.—Male, aged two and a half years, a case of combined eczema and asthma, a premature who weighed three and a half pounds at birth. Eczema began at two months, asthma at two years. The following positive reactions were obtained: horse dander 6+, chicken feathers 4+, duck feathers 4+, goose feathers 4+, cat hair 2+, rabbit hair 2+, wheat whole 6+, oat 2+, rice 2+, corn 1+, beef 5+, lamb 4+, pork 4+, veal 3+, egg white 5+, egg yolk 3+, peanut 5+, mustard 4+, asparagus 2+, lettuce 2+, potato 2+, pepper (black) 2½, lentil 1+, casein 4+, cheese 1+, apple 3+, lemon 2+, peach 2+, tomato 2+, apricot 1+, banana 1+, raspberry 1+, strawberry 1+, orris root 2+, silk 2+. An attempt to desensitize this patient with one minim of 1:10,000 solution of wheat almost proved fatal. Desensitization with horse

dander is at present in progress. Eczema has entirely disappeared.

Case No. 37.—Female, suffering from combined eczema and asthma. The first attack was brought on by picking ragweed during a motor trip. Mustard water was given to produce vomiting and the child nearly died, but was resuscitated with adrenalin. The following positive reactions were obtained: veal 12+, beef 5+, lamb 4+, pork 3+, egg white 5+, egg yolk 5+, potato 5+, mustard 4+, pea 4+, lentil 3+, horse dander 5+, duck feathers 3+, sheep's wool 3+, dog hair 2+, tomato 4+, canteloupe 3+, peach 3+, pineapple 2+, wheat whole 4+, wheat glucosin 3+, wheat proteose 2+, barley 2+, walnut (Eng.) 4+, red top 3+, giant ragweed 3+, orchard grass 1+, sweet vernal grass 1+, cocklebur 1+, black walnut 1+, chicken 1+.

Case No. 38.—Female, combined eczema and asthma, gave the following positive reactions: egg yolk 5+, egg white 4+, potato 3+, celery 1+, onion 1+, buckwheat 2+, apricot 1+, pork 1+, horse dander 1+. This child was completely cured by removing all offending proteins without desensitization. This child suffered from frequent headcolds, otitis media and mastoiditis before skin tests were made.

GROUP 3. *Headcolds, etc.*

Case No. 44.—Male, aged four years, who had continuous head colds for two and a half years, complicated by otitis media, and not relieved by removal of adenoids, gave the following positive reactions: cat hair 6+, chicken feathers 2+.

FIG. 4

The type of reactions is shown in Fig. No. 4. Removal of the family cat and chicken feathers, and a thorough house cleaning was followed by complete relief from all symptoms.

Case No. 45.—Female, aged two years, who had suffered from vomiting attacks, croup and bronchitis for six months, had her first attack of asthma when the mother prepared a mustard paste beside her bed to relieve an attack of bronchitis. The following positive reactions were obtained: mustard 3+, celery 1+, spinach 1+, apple 2+, pear 2+, prune 2+, peanut 2+, orris root 2+, cheese 1+, egg yolk 1+, chicken feathers 1+, goose feathers 1+, rabbit hair 1+. Since the mother realizes the necessity of keeping the air which the child breathes free from powdered mustard and orris root the child has been able to go through two winters without any colds.

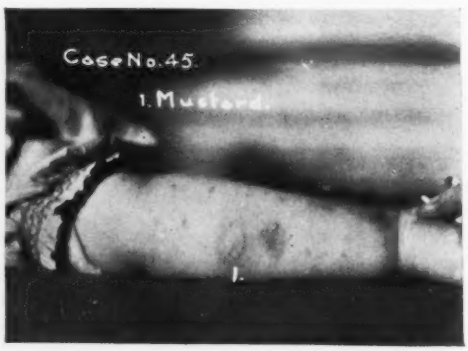

FIG. 5

Fig. No. 5 shows type of reactions.

Case No. 49.—Female, aged one year, who required a mastoid operation at the age of six months, and again at the age of eight months. First definite attack of asthma was noticed at one year. The following positive reactions were obtained: horse dander 3+, spinach 2+. The father is a teamster and was accustomed to play with the baby in the evening without changing his stable clothes. Now that he makes this preliminary change the child is perfectly well.

GROUP 4. *Hay fever.*

Case No. 51.—Male, aged twelve years, who suffered from hay fever for six years, gave the following positive reactions: giant ragweed 4+, golden rod 3+, corn 2+, silk 4+, orris root 1+, dog hair 2+, duck feathers 1+, goose feathers 1+, celery 2+, bean 1+, pumpkin 1+, cheese 2+, walnut (Eng.) 2+, halibut 1+, egg white 1+. Previous testing and attempts at desensitization with ragweed pollen was not followed by any improvement because goldenrod and corn

were not included. Since he has been desensitized with a solution containing these three pollens he has had no further attacks.

Case No. 53.—Female, aged six years, who suffered from hay fever for four years, frequent respiratory infections, conjunctivitis and otitis media, chiefly in summer and fall, gave the following positive reactions: red top 3+, timothy 3+, sweet vernal grass 2+, giant ragweed 2+, annual salt bush 2+, horse dander 2+, goose feathers 1+, kapok 2+. The child was ten per cent underweight and very fatigued. She was desensitized in the spring of 1925 and was not only free from hay fever last summer, but free from colds all winter. Her general health improved greatly. Retests in the spring of 1926 showed that she was negative to all pollens.

GROUP 5. *Miscellaneous.*

Case No. 56.—Female, aged twenty months, had suffered from cyclic vomiting, a condition which had proved fatal to the other two children in the family. The father is a confirmed asthmatic. The patient developed asthma, which was relieved by vomiting, at the age of twenty months at which time skin tests were made and the following positive reactions obtained: chicken feathers 4+, rabbit hair 2+, egg white 3+, egg yolk 3+, lemon 2+, grape 1+, orris root 2+, vanilla 1+. She has been free from both asthmatic attacks and attacks of vomiting since offending proteins were removed.

Two other cases of recurrent vomiting have given negative skin tests.

Case No. 57.—Male, suffered from urticaria, complicated by lienteric diarrhœa at the age of six months. A second attack of urticaria at four years was the reason for doing tests. The following positive reactions were obtained: asparagus 3+, pea 3+, bean 2+, spinach 2+, celery 1+, cauliflower 1+, cocoa 1+, pineapple 3+, banana 2+, orange 2+, tomato 2+, fig 1+, raspberry 1+, strawberry 1+, sheep's wool 3+, cheese 3+, corn 2+, wheat whole 2+, veal 2+, lamb 1+, pork 1+, salmon 2+, cod 1+, peanut 2+, chicken 1+. The child is now six years old and has been unusually healthy since offenders have been removed. This is the only case in which positive reactions have been obtained with urticaria.

Negative reactions were obtained in five cases which were thought to be due to allergic disease but which later were shown to be due to the following: goitre, habit cough, tonsils and adenoids.

A frequent cause of failure is lack of parental co-operation. Where the parents have not permitted complete skin tests, or have lacked confidence in the method and not removed offending substances, satisfactory results have not followed. Unreliable or old proteins are an occasional cause of failure.

Three cases in this series cannot be traced and the final results are not known.

The relative frequency with which proteins gave positive reactions in this series is as follows:

egg white	25	radish	6
duck feathers	20	pork	6
goose feathers	19	beef	6
chicken feathers	18	carrot	6
silk	18	apricot	5
egg yolk	17	grapefruit	5
sheep's wool	17	grape	5
dog hair	15	peach	5
horse dander	14	raspberry	5
cheese	14	asparagus	5
orris root	14	lentil	5
wheat whole	13	lamb	5
potato	13	codfish	5
corn	12	peanut	5
kapok	10	pineapple	4
rabbit hair	10	chicken	4
lactalbumin	10	salmon	4
apple	10	Brazil nut	4
celery	10	cauliflower	4
tomato	10	lettuce	4
orange	9	onion	4
spinach	9	black pepper	3
pea	9	turnip	3
casein	8	sweet potato	3
barley	8	string bean	3
oat	8	squash	3
rice	7	pumpkin	3
banana	7	lima bean	3
strawberry	7	halibut	3
bean	7	walnut	3
cabbage	7	cattle hair	3
cocoa	7	human hair	3
mustard	7	cotton	3
cat hair	7	silk floss	3
prune	6	buckwheat	2
veal	6	canteloupe	2

This shows that silk is a much more frequent cause of eczema than has been previously noted. In this series more positive reactions were obtained with silk than with any other protein found in clothing.

Summary

A history of excessive perspiration is frequently obtained. It has often been noticed that children absolutely refuse foods to which they are sensitive.

Group sensitization is frequent. The individual seems to pick out all the fruits or vegetables or meats or cereals.

Eczema in breast fed infants has responded better than any other group. It is necessary not only to remove the offending proteins in the mother's diet but in the child's clothing as well. Eczema is often complicated by impetigo and scabies because water seems to aggravate the rash. Eczema due to foodstuffs tends to disappear spontaneously at two years. If it is due to dander it will remain until the cause is removed. Asthma is a frequent sequel.

Asthma and eczema sometimes co-exist. The earliest manifestations may be persistent head-colds, croup, recurrent bronchitis and the first attacks may closely simulate bronchopneumonia, although fever is usually absent. Asthma due to foodstuffs is promptly relieved by vomiting. When attacks persist due to the impossibility of removing offending proteins, desensitization must be carried out. This procedure may be very dangerous. When tests are made to determine the weakest solution which will give a positive cutaneous reaction, this test should be considered the first dose.[2] The initial dose should be so small that it has never been known to cause a reaction in anyone. The first dilution will usually be 1:1,000,000.

Hay fever in children responds well to treatment if all sensitizing pollens are used. Retests should be made annually to determine the necessity of further treatment.

Urticaria. The similarity between the wheal produced by rubbing an offending protein into an abrasion and the ordinary hive is well known, but the skin reactions in a small number of these cases have been disappointing. In one case obviously due to strawberries the reaction to strawberry protein was negative. In a recent personal communication Dr. J. F. Burgess points out that while eczema is a skin reaction, urticaria is essentially a vascular disturbance, and this may explain why skin tests usually do not reveal the underlying sensitizing protein (the skin being relatively non-sensitive).

Cyclic vomiting. Whether this disease has an allergic basis is impossible to say. Case No 56 gave positive reactions and later developed asthma.

Conclusions

1. Multiple sensitization to foreign proteins is the rule in allergic children.

2. An allergic heredity was found in 42 per cent of cases.

3. Eczema in breast fed infants is more amenable to treatment than any other allergic group.

4. Silk protein gave more positive reactions than any other protein found in clothing.

5. Desensitization should be commenced with most minute doses, otherwise fatal reactions may occur.

6. The results in urticaria and cyclic vomiting have been disappointing.

I am greatly indebted to Miss H. M. Jeffery for making the actual tests and for much valuable assistance in the preparation of this paper.

References

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Magnesium Sulphate Intravenously. — Lyle G. McNeile and John Vruwink, Los Angeles, assert that the intravenous injection of a 10 per cent solution of magnesium sulphate is a valuable adjunct in the treatment of toxæmia of pregnancy. It will cause some reduction of blood pressure, reduce œdema, increase urinary output, and reduce or control other symptoms. It will control the convulsions of eclampsia in nearly every case, and exercises a favorable influence on the other symptoms of eclampsia. It is a safe procedure. As a prophylactic agent, it will give definite results, the toxic symptoms will frequently disappear entirely, or the condition will be arrested and the patient go on to normal labour. If, on repeated injections, the toxic symptoms recur, pregnancy should be terminated. Regardless of the eventual course of the toxic state, intravenous medication places the patient in a condition with increased resistance and eliminates the dangers subsequent to convulsions both for the mother and for the baby. —*Journal American Medical Association*, July 24, 1926.

NEWER DRUGS, THEIR USE AND ABUSE*

By V. E. Henderson

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AMONGST the duties devolving on your Committee of Pharmacy this year was that of formulating suggestions to be sent to the committee of the General Medical Council of Great Britain which is preparing a new edition of the *British Pharmacopœia*. Consequently the newer drugs which were not included in the 1914 revision had to be passed in review. In *New and Non-Official Medicines* of the American Medical Association there are included 122 such drugs, and if one examines British and German sources this number can readily be increased to 200. Yet your committee recommended only seventeen. These included cotton seed oil recommended as a substitute for olive oil, and trypsin to which no further reference need be made. The committee considered in addition certain other drugs which were not included in the list for technical reasons, chiefly on account of the existence of patents, such as insulin, parathyrin, novasurol, and mercurochrome. The names of a few other drugs were suggested but were not generally approved, for instance benzyl benzoate, and carbromal (adalin).

Why were so few recommended out of the wealth of drugs suggested for use?

The answer to this question is not the subject which I wish to discuss to-day, but I think that some of the reflections contained in this paper will serve as a partial answer.

In the table subjoined I have put down the names of the drugs recommended, and in a second column an estimate of the number of years which elapsed as nearly as I can ascertain from the literature, before they were generally recognized throughout the world as being useful.

You will see at once that true therapeutic discoveries such as arsphenamine, pituitary extract for its action in obstetrics, insulin, and parathyrin, where the drug actually produced definite and striking effects and where clear cut clinical indications for its administration could be given, became known throughout the medical world within a very short period of time, and within two years or so any practictioner who kept abreast of good general clinical literature would find therein pretty definite instructions as to how these drugs should be used.

Arsphenamine	2 years
Neoarsphenamine	2-3 years
Quinidine	2 years
Pituitary extract (for use in obstetrics)	2 years
Barium sulphate (for use in x-ray)	2-4 years
Luminal (for use in epilepsy)	3 years
Sodium barbitone (sodium veronal)	5 years (?)
Protargol	6 years (?)
Argyrol	6 years (?)
Dextrose	indefinite
Oxygen	indefinite
Nitrous oxide	indefinite
Cinchophen	6-8 years
Chlorbutanol (chloretone)	indefinite
Emetine hydrochloride (for use in amœbic dysentery)	3 years
Eucalyptol	indefinite
Insulin	2 years
Parathyrin	2 years (?)
Novasurol	9 years or 4-5 years (for œdema)
Mercurochrome	3 years +
Carbromal (adalin)	10 years

But rapidity of diffusion of the knowledge of a drug is no necessary criterion of its general usefulness or indeed of its usefulness at all. Let us take a specific case. As a result of laboratory studies, Dr. Macht of Johns Hopkins was led to recommend the use of benzyl benzoate for the relief of spasm in smooth muscle. An examination of his experimental data reveals that the concentrations employed in his experiments on animals were greatly in excess of what was recommended for patients, and his clinical reports and those of the first clinicians who employed it, do not make one feel that they adduced very strong clinical evidence for its employment. Owing to the active propaganda of pharmaceutical houses, most physicians have employed it, and I feel pretty confident that almost all will agree with the pharmacologist of

* An address delivered at the annual meeting of The Canadian Medical Association, Victoria, June, 1926.

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to-day who does not consider this drug possesses true therapeutic merit. The practitioner should suspect advertised statements and be cautious in taking such as an indication for the use of a medicament.

A new drug which is passing through the stage of having a market built up for it by advertising seems to possess more therapeutic merit, and yet the advertising often seems to outrun the therapeutic claims made by its discoverer. I refer to hexylresorcinol, advertised as caprecol. This drug, introduced by Vedder Leonard in 1924, consists of a resorcinol group, *i.e.*, phenol with an additional OH group to which is attached a long chain of six carbon atoms. Now it is known that such long chain antiseptics are very often highly specific in their action, being good antiseptics for certain bacterial races, but very inefficient for others. This drug has been tested by a fair number of observers. Let us sum up the findings reported by Leonard, Henling and others.

A mild colon infection anywhere in the urinary tract from the pelvis down can frequently be cleared up, but not if it is very severe with a high bacterial count, nor if the kidney parenchyma be invaded, though in this case there may be subjective improvement though no actual cure. On the other hand, infections by Gram-positive cocci appear to be cured promptly and permanently. Gonorrhœa is as a rule not affected and mixed infections are much less easily improved.

I think we may conclude that this highly specific disinfectant agent for the urinary tract will prove to be only successful in a small percentage if used on unselected cases. I have been told many times in regard to this drug, that in some cases apparently brilliant cures have been produced, but in others similar in character as far as the general practitioner knew, no results have been obtained. I feel quite certain from a study of the literature that in many of these cases, supposed to be of the same type, there were differences in the character of the infective agent, and a difference in the location of the infection, and that in certain of these cases errors in technique were adequate to explain the failure. Leonard has pointed out that the administration of carbonates to patients taking this drug leads to such a change in the physical state of the excreted resorcinol as to make it ineffective as an antiseptic. Further, he has pointed out that to obtain good results the water intake of the patients must be limited. In the eyes of most clinicians this will appear as a very serious limitation to the general use of this drug. We might also point out that Leonard agrees with others, that hexyl-resorcinol will probably prove much more useful in the chronic type of case, which has resisted treatment by other means, than in other cases, though it may give brilliant results in the acute case. Still, in the acute case other methods of treatment, so often produce a cure that it will be difficult to assess the advantages derived from the use of hexyl-resorcinol.

Let us turn now to some of the drugs recommended and see the basis for their widespread and rapid acceptance.

Insulin.—It is unnecessary to discuss the reasons for the acceptance of insulin as from the first there was abundant evidence that it represented the active endocrine of the pancreas the production of which was deficient in the diabetic patient. I would warn the practitioner, however, that no good case has as yet been made for its employment in many other conditions in which its use has been advocated; for example, as a means of treating marantic infants, or in the pernicious vomiting of pregnancy, or in toxic fatty degeneration of the liver. Even its value given with glucose to decrease post-anæsthetic vomiting has not yet been clearly demonstrated.

In regard to *parathyrin* we have again an endocrine which will replace the secretion deficient in infantile tetanus but it is known that the convulsions of this disease can be controlled more quickly by the administration of ammonium chloride by the mouth or by calcium than by parathyrin which acts in about twelve hours. This drug will probably prove to be more useful in other cases in which calcium metabolism is abnormal but definite indications for its employment are not yet clearly established.

Pituitary extract in obstetrics forms an excellent illustration of the rapidity of the spread of knowledge and of how clinical and pharmacological investigation may outrun physiology. In 1909 Blair Bell, Frankl-Hochwart and Frölich reported some experiments which

disclosed the effect of pituitary extract on the uterus and which amplified the observations of Dale. Blair Bell tried it on patients for post-partum hæmorrhage and in 1910 Aarons in England, and Foges and Hofstätter in Vienna, reported larger series of cases. In 1911 Hofbauer for the first time used it to increase labour pains. In 1913 a review of the literature disclosed some ninety-seven papers and some 1650 cases in which it had been used and it was already a recognized procedure in obstetrics, to increase the contractions of the uterus in the second stage of labour. Subsequently it has been used to bring about labour at full time. The reason for its action is only being made manifest at the present time. The work of Dixon, Marshall and Kraus suggests the following physiological explanation. The normal degeneration of the corpus luteum in the last days of pregnancy enables an ovarian hormone to so affect the pituitary gland that an additional supply of its active principle appears in the blood stream and this affects the uterine muscle which at this time is particularly susceptible to its action. If, for any reason, the pituitary supply in the blood stream is deficient, labour will be postponed or delayed, though other causes may have the same effect. Now, it is known that a just adequate amount of pituitary principle produces increase of uterine contraction with but little increase of tone or spasm, while any considerable excess produces both increased movement and tone, Increase of tone in the cervix must be avoided, if labour is to be initiated without danger of uterine rupture or death of the fœtus. As ordinarily we do not know the cause of delay, whether lack of pituitary or other cause, the greatest care must be employed that too large a dose be not given. In other words, a minimal dose must be given first and only increased if the first proves ineffective.

Luminal, or *phenyl-barbituric acid* and its sodium salt were introduced by Impens as a hypnotic in 1912. In 1915 it was employed definitely for epilepsy, and there is no doubt that in epilepsy it is a most important addition to our armamentarium, particularly in cases seen in the earliest phase, after the first or second attack, and when it is used with care and discretion. Luminal is relatively quick in its action, bromides produce an effective decrease in central motor activity more slowly. Consequently luminal can be given intermittently, or when outward signs or symptoms indicate the likelihood of an attack to much better advantage than the bromides. This is the great point in its favour. In the early, mild and infrequent cases of epilepsy it is of the greatest value, though it is also useful in the well developed type.

It is true that luminal is an hypnotic, and probably the most dangerous of this relatively dangerous series, with certain well marked subsidiary actions, namely a tendency to produce drowsiness even twenty-four hours after its ingestion, and also not infrequently, skin reactions. Yet because its dose is small and relatively easy to take one finds practitioners recommending their patients to buy luminal tablets at the drug store and take them for insomnia as they require it. This drug should really appear on a poison schedule and druggists be prevented from its sale save on prescription.

Quinidine is another example of the rapidity with which a drug with precise indications becomes known to the medical world. In 1917 Wenckebach had a case of auricular fibrillation and malaria, and as a result of administering quinidine to cure the malaria, cured the fibrillation. In 1918, Frey tried this method of treatment and in 1920 Hoffman showed that quinidine had more effect on cardiac musculature than quinine. Consequently Frey, Bergmann and many others in Germany, Lewis and his co-workers and Ellis in England, Levy, Hewitt and others in the United States during 1921-2 published papers describing the effects of this drugstuff in the treatment of auricular fibrillation. In all, by the end of 1922, some 240 cases had been treated with this drug throughout the world, and the results published; quinidine had become a recognized means of treatment in auricular fibrillation. Since that time many more papers have been published but they have added very little to our knowledge of its use. These studies have shown that about half of the cases treated with quinidine recover, that of this half some relapsed and that there were a small number of deaths amongst those apparently cured. Lewis had shown in 1921 that the effectiveness of quinidine depended upon its two distinct

and opposite actions. Firstly, it decreased the rate of conduction and consequently slowed down the rate at which the irregular circus movements in the auricles, which are the physiological cause of the fibrillation, progressed; and secondly, that it increased the time taken for the muscle fibre to recover its irritability after the passage of an impulse over it. The first factor, while it tends to decrease the fibrillation rate, is not advantageous, and indeed the ventricular rate often increases, and the patient is temporarily worse. The second factor is that on which success depends. If the period of time taken for the recovery of the irritability of the auricular muscle fibre is sufficiently increased the circus movement inevitably dies out and the normal pacemaker at the sinus node regains its control and the patient is cured. An examination of the literature since 1922 serves to show that the percentage of successes has increased somewhat, probably due to a larger number of cases being treated in the early stages of fibrillation, to the patient having been treated more carefully with digitalis at first, and the heart muscle fibre having been got into a much better condition by this treatment, and by rest. The mortality after cure seems also to have decreased as more care was taken with the patients after they had recovered, and the patient kept in bed, in spite of feeling very much better, until the heart had adjusted itself to normal activity. Nevertheless fibrillation should be definitely diagnosed before quinidine is given. It must be used with caution and a test dose of 0.3 grams (5 grains) should be given in order to see whether the patient is going to show unfortunate toxic symptoms which resemble those of quinine. Finally it may be asserted that this valuable drug should not be used by the general practitioner at present, but is a tool to be employed by the expert in a hospital.

Novasurol.—I wish next to discuss a drug-stuff whose history I think is a good illustration of certain phases of our advance in therapeutic knowledge. Novasurol is said to be a double sodium salt of oxymercurichlorophenoxyl acetic acid and veronal. It was first introduced by Zieler in 1917 as a means for the administration of mercury in cases of syphilis. It, however, has not proved to be of much greater advantage in this respect than other mercurial preparations, which are in common use, in spite of the fact that it can be given intramuscularly with little pain or infiltration. It was, however, observed that it produced a very marked excretion of urine and that œdematous patients frequently lost a good deal of fluid under its use. In consequence of these observations it began in 1921 to be used as a diuretic and by 1925-6 we find that throughout the world it is being used for this purpose. If, however, one examines the clinical literature one finds that the indications for its employment are not very precise, and if one considers the scientific literature which has arisen one is uncertain as to exactly how the diuretic effect is produced. Some authorities claim that its effect is produced in the kidney; other authors maintain that its action is entirely extrarenal, and make changes in the permeability of the capillary or lymphatic walls responsible for its action. The cases in which it has rendered the greatest service appear to be cases of œdema not renal in cause, but due to circulatory disturbance or hepatic cirrhosis. The excretion of chlorides and of sodium salts seems to have been increased in all cases by its use, yet there are frequently cases in which it appears to fail. For example, in the work performed by Keith and his co-workers on renal cases, there were cases in which there was marked sodium and chloride retention with œdema in which the administration of a diet poor in sodium chloride led to an increased excretion of water and sodium salts. In some of these cases the administration of ammonium chloride increased the excretion; the œdema, however, was not entirely relieved. Novasurol given alone in some cases proved effective in causing a very considerable loss of water and of chlorides and disappearance of the œdema. In certain other cases described by Keith it was not effective when given alone with a salt poor diet but was effective when it was combined with the administration of ammonium chloride. A careful study of the literature leads one to believe that while it may be a useful drug when administered by the expert to carefully controlled cases, and may produce very marked relief of œdema, that it is not likely to be a drug which will be generally useful in practice, and that

the complications both chemical and mechanical in cases of œdema are so interwoven that it will be very difficult to arrive at a clinical description sufficiently clear cut and definite that the general practitioner could feel certain of success in its employment. Unfortunately its administration is not free from toxic effects. In many cases it produces some abdominal pains, tenesmus and diarrhœa which last two or three days. In other cases it has produced cyanosis, sweating, chills and gingivitis.

Mercurochrome.—There are few cases in medicine more annoying than those of infection of the urinary tract, pyelitis and cystitis. Mercurochrome has been highly extolled as a disinfectant in these cases. It is a dye containing mercury which may be given intravenously or applied locally throughout the tract. If one takes the recent literature one finds there is an increasing agreement that it is most useful in the acute or sub-acute cases of infection due to bacilli or cocci, whereas in the chronic cases, which are much the more difficult to treat, it is of less value. This drugstuff is an example of these highly specialized chemo-therapeutic substances whose study is in its infancy. It is a characteristic of these substances, of which the best known is arsphenamine, that they frequently appear to cure or greatly alleviate the symptoms of a disease in spite of the fact that they themselves may even be non-toxic to the organisms causing the disease which they cure. The spirochæta pallida is not killed by any concentration of arsphenamine which can be produced in the blood stream. This is also true of such substances as Bayer's 205 or Fourneau's 309 which are able to cure sleeping sickness. These drugs must undergo some change in the body in order to produce the death of the causal organism. Mercurochrome is excreted through the urine and the bile, but even after the bile has undergone its normal concentration in the gall bladder, it has no direct bacteriocidal action as was shown by Hinch, Green and Snell, and the concentration in the blood and tissues is never great enough to kill the bacteria. Yet it is an undoubted fact that it has a curative effect on the cause of the disease and particularly in cases of streptococcic and staphylococcic infection. It has much less effect on the gonococcus. This difference in its curative action upon different races of bacteria is characteristic of these highly specific antiseptics. This drugstuff, however, is not free from unfortunate effects. Toxic reactions are frequent, consisting in prostration, chills and diarrhœa. Most observers consider that the secondary injections give slighter reactions. Consequently again we have a drugstuff which in the hands of experts who are able to study their cases bacteriologically and put the patients under careful control frequently yields brilliant results. The general practitioner, however, working without such exact knowledge of the exact conditions with which he has to deal, may at times obtain brilliant results, but he must also expect a relatively high percentage of failures and this is particularly true in the chronic cases which give him the most trouble.

Novatophan, cinchophen.—Novatophan was introduced by Nicolaier and Dohrn in 1908. On account of the marked property that it seemed to possess of increasing the excretion of uric acid it was suggested as a treatment for gout and it was hoped that the body would be freed from its excess of uric acid by this means. This expectation has not been fulfilled. There is little doubt that the pain of an acute attack of gout is relieved but while the concentration of uric acid in the blood stream falls there is no permanent improvement in uric acid excretion. Its effect is symptomatic rather than curative. This drug has been used in chronic rheumatism and also in the acute disease. Recent careful studies by Hanzlik and Scott, and Chase, Meyers and Kilian, 1921, have revealed that in rheumatism there is no correspondence between the effects produced on the excretion of uric acid, though this is increased as a rule, and the subjective and objective changes in the disease. The large doses of cinchophen or its derivative neocinchophen needed for the treatment of rheumatic fever produce some symptoms of toxicity resembling those produced by salicylates. They produce, however, less symptoms of gastric upset, especially when used with alkalies. There seems to be more vasomotor disturbance leading to urticarial reactions with cinchophen than with salicylates. Both cinchophen and salicylates have some deleterious effect on the kidney but this is less with cinchophen. Cinchophen we might conclude, owing to its

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chemical nature, would be expected to produce more depression of pain in the central nervous system than the sodium salicylate, just as acetylsalicylic acid has more central effect than salicylates have, and to this central effect must be ascribed the alleviation of pain that occurs in many cases of indefinite rheumatism. Even if we adopt the view of some (Swift) that cinchophen, like salicylates, has a definitely curative effect on the articular inflammation in acute rheumatism, it must not be assumed that cinchophen has a curative effect when it relieves indefinite pains. Its employment here is purely symptomatic and it is to be hoped that physicians will not by careless advice to their patients allow this drug to become a generally known palliative for pain, employed like acetyl-salicylic acid daily by large numbers of people. While the displacement of the antipyretic group, phenacetin and acetanilid by acetyl-salicylic acid has decreased the dangers inherent in the routine lay employment of palliatives for pain, there is every reason to believe that a widespread use of cinchophen would not be equally safe. Further, the widespread use of such a palliative by lay persons defeats the prophylactic ideals of medicine, leads to the increase of unattended sickness and to many cases of indefinite pain, which after all is but an indication of disease which may progress to a serious stage before being seen by the physician.

These few examples selected from the above list illustrate sufficiently clearly certain points in regard to drugs. (1) That a remedy definitely curative with specific indications will become very rapidly known to all reading physicians. (2) That where there are definite indications for a drug, *e.g.*, novasurol in severe œdema, success may be attained in its use if employed wisely and with caution and a realization of its limitations and dangers, even if its mode of action is not known. (3) That certain highly specific drugs will be useful to the specialist or even to the practitioner who makes a careful study of his cases and of the drugs themselves. (4) That the vast majority of drugs recommended by advertisement are of little or no value and that a physician employing thoughtfully and accurately the drugs of the *Pharmacopœia* can do more for his patients than by listening to the specious pleadings of the detail man who should be instantly dismissed by any physician, who is trying to serve his patient, with the same abruptness as that with which Eve should have dismissed the serpent. (5) That at times there are drugs of relatively low efficiency which long experience will show to be of value, *e.g.*, carbromal or argyrol, but that our knowledge of their value can only be built up by the physician's careful study of them, and the cases in which they are useful, and recording the same for the benefit of others; and further, that unless he is willing to undertake such study he had better wait for others to do so. (6) That no physician should recommend drugs to patients by name and so encourage their use by lay patients so as to lead to their abuse by the public and an increase in unattended sickness.

REVISION OF THE "*BRITISH PHARMACOPŒIA*"

Dr. Hawthorne reported at the recent meeting of the Council in Nottingham that the two representatives nominated by the Chairman of Council—namely, Dr. Bone and Mr. Lewis Lilley—attended a conference called by the General Medical Council to consider the revision of the *British Pharmacopœia*. It had since been learned that whilst there might or might not be another conference, it was proposed that a committee should be appointed under the Privy Council to be called the Revision Committee, which would sit for the purpose of hearing evidence. It was not known when that committee would be called together, and all that could be done at the moment was to approve or disapprove certain suggestions made by representatives of the bodies invited to attend the conference. These suggestions, with which the Science Committee agreed, were as follows:

(*a*) That it is desirable that the revision of the *British Pharmacopœia* should be placed in the hands of experts appointed for that purpose by the General Medical Council.

(*b*) That it is desirable that the work of the Revision Committee should be continuous and not cease for a time with the publication of any one edition of the *Pharmacopœia*.

(*c*) That the Governments of India and the Dominions be requested, if they think fit, to appoint expert committees to work in co-operation with the committee in Great Britain.

The Chairman said that he understood the Revision Committee had actually been appointed by the Privy Council, and he thought its personnel, when it became known, would be acceptable to the profession.

The Council approved the propositions set out above, and Dr. Hawthorne then moved that the Chairman of the Science Committee, Professor W. E. Dixon, Dr. J. W. Bone, and Mr. E. Lewis Lilley, with power to co-opt, be authorized to act as a watching committee in relation to any steps that might be taken with regard to the revision of the *British Pharmacopœia*, and to prepare evidence and nominate witnesses. (Extract from *Brit. Med. Jour.*, Aug. 7, 1926).

RESUME ON THE TREATMENT OF FRACTURES

Presenting the Views of the Academy of Medicine of Western Ontario

By George A. Ramsay, M.D.

London

THIS paper is presented as an experiment, and it is hoped it will be received with your kind tolerance. It is a contribution of a unit society of the Ontario Medical Association, and, as its title suggests, is an attempt to compile the views of the members of the Academy of Medicine of Western Ontario on an important subject. Should the project prove worthy, perhaps it may be warrant for programme development in future meetings.

In the past three years this society has been addressed by three noted authors, one American and two British, on the subject of fractures. Not all those who were in attendance at these meetings were convinced that the needs and viewpoint of the general practitioner were met, and it was decided to have the subject presented by some of the practising physicians of Western Ontario.

Leadership, in the discussion of the "non-operative treatment" was in the hands of Dr. C. F. Smith of St. Mary's and Dr. J. C. Gandier of Clinton; Dr. E. R. Secord of Brantford and Dr. Hadley Williams of London debated the relative merits and indications for operative treatment. A satisfying discussion followed and its product, condensed, is submitted, not necessarily as a concensus of opinion on method, but rather as an agreement of principle in the management of fractures.

The generalities of fracture treatment may be said to include the following:

Fractures in the great majority of cases are within the scope of the general practitioner; consequently, the standard of results will follow from the technique, that is possible for the man in general practice.

The results of treatment have a direct bearing on economics, both individual and national. The pay envelope must be maintained to the highest possible degree for those who have suffered from a fracture. The ultimate good in treatment is to obtain the best functional result with the minimum period of disability.

Principles are essential to the correct approach to fractures. Methods may vary, but are to be judged as to their merit according as they conform to the principle involved in the particular fracture.

The mental equipment necessary is a mechanical appreciation of the anatomy involved; a recognition of the variation of the same from the normal, and a knowledge of mechanics that will re-adjust the displaced factors and maintain that position. The underlying object is to secure physiological rest of the muscular tissues under such trying circumstances, as when the stimulus of a piercing bone fragment tends every moment toward contraction.

The more the surgeon does intelligently to bring the displaced fragments into ultimate apposition the less there is left for nature to effect. Therefore, he must correct the displacement that occurs in the longitudinal axis resulting in over-riding, or in the transverse axis that results in over-lapping or in the direction of the circumference giving rise to rotation of the distal fragment on its proximal component. These requirements are affected by primary manual reduction, under the best possible conditions of anæsthesia and assistance, and are subsequently to be maintained by one or all of the principles of traction, coaptation and suspension.

The possible over-riding displacement in the longitudinal axis requires traction by extension and counter extension. In the femur this is maintained by the Thomas splint with the form of Buck's extension applicable to the condition. In the leg it is maintained by plaster casings or splints. The upper arm is, likewise, best treated by apparatus of the type of the Jones'

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humerus splint, or the aeroplane splint when considerable abduction is required. The lower arm lends itself to anterior and posterior moulded splints of plaster. The clavicle responds well to the clavicular cross.

Overlapping displacement in the transverse axis requires a side pull from the longitudinal side splint such as may be given by small coaptation splints or counter pressure pads. The matter of correcting the rotation on the longitudinal axis of the distal fragment is through right angled leverage supplied by the foot, and is secured by the suspension of the foot in the normal vertical position. Vertical suspension also gives the affected limb the advantages of easy lymphatic and venous drainage and adds to the comfort of the patient.

The principles of immobilization or mobilization should be combined in their timely relative proportions in the particular fracture. The guiding rules being:

Union first and function will follow.

The nearer the joint the sooner you move.

The larger the bone, the longer you splint.

Massage of the proper intensity is to be instituted from the very beginning.

Protected, and assisted active movement may follow early, and active motion may be instituted by the patient as soon as pain will permit.

Weight bearing bones should be adequately protected from weight bearing until the bony union is sufficient to prevent bowing under the strain.

These axioms of fracture experience are submitted:

Timely sufficient first aid will play an important rôle in the destiny of most fractures, hence "Splint them where they lie."

Recognition of the possible pathology of every tissue from the bone to the skin, and of the possible complication of infection, is of immediate consideration, hence, the need to examine early, carefully and painlessly with the other limb for comparison. Deliberate crepitus curiosity is pernicious. The clinical evidence of abnormal mobility or distortion of form taken with palpable early sub-periosteal exudate or visible subcutaneous hæmorrhage is presumptive evidence which can be elaborated by later x-ray examination.

Good anatomical restitution of a fractured long bone insures the best functional results and has the shortest period of disability. This indicates the prime necessity of manual reduction into the best degree of accurate apposition as a primary measure and is to be checked by a radiograph wherever possible.

When impaction has occurred, consideration is to be given to the advisability of breaking it down. This necessity is absolute in fractures of the wrist of the Colles's type, and is prohibited in most of the high fractures of the neck and head of the humerus. Other impactions are a matter of judgment as to their disposal.

Repair demands a great effort of the vital processes to close the gap with highly specialized bone tissue. Hence, the necessity to securely and continuously maintain the intimate apposition of the fragments during the first period of repair. The joint above and the joint below the fracture require to be immobilized in the splint or dressing during the early days of repair.

The time of reduction bears a direct ratio to the ultimate result obtained. Fractures should be reduced as soon as possible after receipt of injury. otherwise the penetration of the tissues by exudate tends to immediate contraction for accommodation, and later contracture resulting from scar tissue formation. This haste in setting a fracture is only tempered by the necessity of deciding upon some form of permanent dressing and having all of the necessary paraphernalia ready to hand and in good working order.

"There is no method universally applicable, nor is there any one splint or variety of apparatus of infallible superiority." The one that works best is the one you know best how to use.

The results are best and worst in the extremes of age. Under fifteen, within the age of bone growth, there is never non-union, nor is there any necessity for operative treatment. This last applies also in the senile cases.

Special features.—Dr. J. C. Gandier brought out these points in the treatment of *fractures of the femur*. The method is by flexion of the knee and hip joint to relax the muscles, gentle rotation and hand manipulation to disengage and align the fragments, traction by Buck's extension using a separate weight and pulley for each adhesive strip; lateral traction by the same method. Coaptation splints of moulded plaster, without padding. He requires anæsthesia in

every case, and in hip fractures of children uses vertical suspension of both legs. He condemns the use of the Liston long splint and stresses the need of primary manual reduction before splinting. The abducted position in high hip fractures is insisted upon and plaster casts are not advised. The need of keeping the patient in a restful contended mood indicates the use of bromides for ten days.

Regarding *fractures of the leg,* Dr. C. F. Smith makes certain clinical divisions, with regard to treatment. Simple fractures of either bone with and without swelling are treated with a backsplint and foot piece while the swelling exists; then they are to be put in a dextrin splint in preference to plaster, and allowed crutches in from ten days to three weeks. When both bones are fractured he adds side splints and is careful of all padding. He advises knee and hip flexion as a preliminary to reduction and works against the tendency to rotation. Dextrin may be used as a cast dressing in three weeks. In compound fractures he follows the same rule and leaves a space in the padding to permit of dressing.

With regard to *Pott's fracture* with dislocation he reduces by flexion, manipulating the foot forward with adduction and inversion; he then applies a back splint and twisted foot piece. Stimson's plaster splints are allowed when the swelling has subsided. When fractures of the leg are difficult to hold in position he adds extension. At the ankle, when the fracture is compound and comminuted, he keeps on a posterior splint with foot piece and sees no justification for any operative measure of plates or otherwise.

Regarding the *open operation method.* Certain fractures may be considered operative, which term will include, also, open reduction with or without attempt at internal fixation by means of sutures, wire, plates or grafts. Such measures may be employed in the rebellious fractures which will not stay "put", and in a general way, it may be said that operative treatment suggests itself as the preferable method in any fracture which cannot be properly reduced or satisfactorily retained after reduction.

Dr. E. R. Secord of Brantford considered that certain fractures can be treated most successfully under ordinary circumstances by open reduction and fixation. In this group he included fractures of the neck of the humerus, which are to be treated by an "in-driven" peg of beef bone, whose lower extremity is intramedullary in the shaft and the upper enters the cancellous structure of the head. In the young adult with a fracture of the neck of the femur a somewhat similar procedure is advised. In the shaft above the middle the Lane plate is advised, and he claimed that in hospital cases this method is preferable to the external fixation method. In the lower portion, the Thomas splint with caliper extension is judged superior. Inter-condylar fractures are to be treated by nailing them together. Fracture of the patella is to be treated by silver wire or kangaroo tendon fixation through drill holes in the bone. Fracture of both bones of the forearm are to be treated by Lane plates. In sliding oblique fractures of the tibia he advised plates, and when the fibula is also broken at that level he considered open operation to permit leverage reduction as advisable. The os calcis does not need open treatment but mallet percussion to remodel the planter arch. He also pointed out the necessity to focus attention on the reduction of the fracture first, before considering the method of splinting. Since the function of a splint can only be to retain fragments in the position we place them, the open operation in these several types of simple fracture would appear to be justified. The majority of fractures in his opinion did not need operative treatment, but when this measure was deemed desirable external fixation was still a component part of the treatment. He also asserted that the details of the non-operative treatment in fractures of the femur, for example, were exhausting, and if perfect asepsis is assured the results in the smaller hospitals were better under the operative method.

Dr. Hadley Williams does not believe as much in operative treatment as formerly, but when the ordinary methods of splint fail to hold the bones in apposition then recourse to the open method is indicated. The number of such cases form only a very small percentage.

The benefits to be expected were bony union, a straight bone, good function and the minimum use of rigid splints. The dangers were, infection and possible refracture of bone due to osteoporosis arising from the screws which act as a foreign body. Plating, wiring or other open

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procedure was advisedly deferred for such time as would allow infection to subside and circulation to be re-established. The greatest need for open operation is in those fractures in which we have to consider the possibility of non-union. This occurs most commonly in the femur and the humerus. There is no necessity to consider the paired bones as often coming within the scope of operative treatment. In long standing cases of non-union, operation is rarely indicated as these patients have developed a technique of motion that will not be enhanced by operative fixation. He said that in some cases he preferred to use wire rather than plates and has had satisfying results from the same. In fractured patella the joint is always opened and he prefers to stay outside and to do a periosteal suture with chromic catgut, emphasized the need of early movement. His conclusion is that conservative treatment in fractures has the first consideration.

NON-RELATION OF MALNUTRITI ON IN SCHOOL CHILDREN TO INFECTION*†

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AND

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The Problem

"LOWERED RESISTANCE" the result of fatigue, malnutrition, general poor health are offered many times daily by both profession and public as a reason for the incidence of an attack of infection, or for misfortunes which may occur in the progress or outcome of an infection. What is this resistance thus said to be lowered? How strong a resistance is it? What diseases may it be considered to affect? There is much evidence that certain really definite "resistances" to infection (such resistances as those obtained by protective inoculations of toxins, etc.), when once established, cannot be "lowered" by any ordinary occurrences. For example, the person who has once recovered from smallpox or chickenpox as a rule will not thereafter contract smallpox or chickenpox respectively, even on the most intimate exposure, whether at the time of exposure he be in the highest health, or be half-starved, half frozen, drunk, or diabetic. Evidently then, some "resistances," *i.e.*, those obtained by previous attacks, etc., cannot be "lowered" by any agency. On the other hand, there are many associations of malnutrition, chill, debauchery or existing disease with immediately subsequent attacks of infections, notably the respiratory infections such as common colds, bronchitis, pneumonia, tuberculosis, which lend colour to the teaching that "lowered resistance" in these respiratory diseases, may be a factor in their incidence. It is also true, however, that much evidence to the contrary may be adduced even in these respiratory infections, for attacks of colds, bronchitis, pneumonia and tuberculosis develop daily in persons who preceding the attack, are apparently in the best of health.

The questions then not only of the mere existence of lowered resistance to the ordinary infectious diseases, but also of the circumstances and conditions which may affect such resistance or precipitate lowered resistance, are by no means closed.

That high health and high resistance to infec-

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* Read before the Canadian Medical Association, Victoria, June, 1926.

† In abstract. For complete article see *Canadian Public Health Journal*, September, 1926.

tion naturally go together and also poor health and low resistance, seems to be very generally held by the public, and even by the medical profession. But when we consider the origin of the really definite resistances, such as the resistance to smallpox, chickenpox, typhoid fever, scarlet fever, etc., it is obvious at once that these resistances are not the products of health in any sense, but of disease—of a previous attack, of an inoculation of the corresponding toxin, or, antitoxin products, or other by-products of disease. There is, indeed, no evidence, in the infectious diseases, that high health has a causative relation to high resistance, but rather that high health has an inverse relation to high resistance; for the person whose previous history shows continuous uninterrupted high health (in the absence of exposure to infection) is more than likely to be susceptible rather than resistant to infectious disease, since the very absence of previous infection has left him without any accumulation of those immunities such as most of us, with long sickness records, or exposures to infections, gather in time from such previous encounters with infection. This was notably true, on a large scale, in the Great War, where rural battalions suffered from outbreaks of infections much more than city battalions. The rural battalions had the physique, but the city battalions had the resistance—gathered from previous exposures, not from previous high health. In practice we all admit this, for in the matter of quarantine when persons have been exposed to an infectious disease, we do not make enquiries as to the existence of a present state of high health, but ask whether the person has had this particular disease before. Quarantine or release takes place on this basis, and not on the basis of poor or good health at the time of exposure. Nevertheless, the idea that poor health and low resistance go together is so strongly held, that it seems worth while to review the evidence.

It was with the hope of contributing to these questions in one field, the relation of malnutrition to resistance against the infectious diseases of childhood that the investigation here reported was undertaken. Determinations of malnutrition amongst school children have now been made for a number of years in many places. It was suggested by one of us (H.W.H.) that, since the school children had been in many places separated into a mal-nourished group and a well-nourished group, it would not be difficult, although laborious, to discover from official records the amount of smallpox, chickenpox, mumps, etc., which had occurred among these children and then determine the relative numbers of infections which the mal-nourished and the well-nourished groups respectively supplied. Obviously, if malnutrition be a definite factor in increasing the incidence of infection, the mal-nourished children should supply cases of infection in greater proportion than the well-nourished.

The Methods

In undertaking this study, in Vancouver the first step was to ascertain what data bearing on the subject were available, and whether the collecting and recording of the information had been such that it could be considered sufficiently accurate for our purpose.

A height-weight-age survey of all public school children had been made by the school nursing staff during the fall of 1924, and the classification into mal-nourished and well-nourished groups had been completed, using the standards, then generally employed, as prepared by Dr. Thomas D. Wood of Columbia University, New York. Each nurse had been supplied with a percentage table in order that the percentage classification be as accurate as possible. In this survey all children 10 per cent or more underweight for height and age had been classified as mal-nourished. In the fall of 1925 also a similar survey was made; but the standards used then in classifying the children were the revised standards issued recently by Dr. Thos. D. Wood and Dr. Bird Baldwin, in which the weights regarded as normal are not so high as in the previous tables.

The application of the earlier standards in 1924 to the 16,242 children then in Vancouver Public Schools showed 25 per cent of the children mal-nourished, seventy-five per cent well-nourished. The application of the new standards, in 1925, to the 16,771 children then investigated showed only 16.7 per cent of the children mal-nourished in 1925. This difference in percentages does not indicate any marked changes in the actual nutritional condition of the school children as a whole. In fact, there is no

reason to believe that any great actual change took place. Most of the difference—the apparent improvement—between the 25 per cent malnutrition of the 1924 (*i.e.*, six children mal-nourished out of every twenty-four) and the 16.7 per cent of the malnutrition in 1925 (*i.e.*, four children mal-nourished out of every twenty-four was due merely to the change in standards; that is of every twenty-four children, two who would have been placed in the group classed as mal-nourished in 1924, were placed in the group classed as well-nourished in 1925. It is from the reports of these surveys that the general and special malnutrition percentages have been taken.

Since all infectious diseases occurring among school children during the whole school year 1924-25, and for the school year 1925-26 to January 1926 had been recorded by name and age of the child, the school with which he was connected and the disease from which he suffered, the records of both the above groupings mal-nourished and well-nourished children as to subsequent disease during these periods were also available. After considering these records it was felt that there was at hand sufficiently dependable material capable of yielding the required information, and it was decided to proceed with the investigation, following two plans, each the converse of the other.

Plan 1.—To determine the percentage of infection occurring amongst: (a) previously normal-weight children, (b) previously mal-nourished children. This would determine the relative incidence of infection in each of these groups, and therefore would indicate whether or not malnutrition appeared to invite infection.

Plan 2.—To list children who had contracted various infections, and then to look up in the school records their previous nutritional standing. This would indicate from which class, mal-nourished or well-nourished, each such infected child came; and therefore whether infection picked out the mal-nourished in preference to the well nourished, or otherwise.

The Results—Plan 1

Plan 1.—Through reference to the height-weight-age records, the nutritional status of about 6,000 children—about 4,000 normal weight and about 2,000 mal-nourished—was established. Reference thereafter to the infectious disease records yielded the information regarding infections suffered by the children in each of these groups. The results are shown in the following table.

TABLE I

(Plan 1, A) 1924-25

Infections Occurring Among 1,089 Normal-Weight Children
(Selected from the Seymour and Alexandra Schools)

The well-nourished status of these 1,089 children was established from the school medical height–weight–age records made in September, 1924. The infectious diseases recorded are those shown by the same records as occurring amongst these same children during the subsequent school year of 1924–1925.

1,089 Well-Nourished Children

	Scarlet fever	*Diphtheria*	*Whooping cough*	*Chicken-pox*	*Small-pox*	*Mumps*	*Totals*
No. of Children Infected...	12	5	6	59	17	4	103
Percentage.....	1.1	.46	.55	5.4	1.5	.36	9.5

TABLE II

(Plan 1, B) 1924-25

Infections Occurring Amongst 1,016 Mal-nourished Children
(Selected from the Alexandra, Charles Dickens, Dawson, Florence Nightingale, Grandview and Laura Secord Schools)

The malnutrition status of these 1,016 children was established from the school medical height-weight-age records made in September, 1924. The infectious diseases recorded are those shown by the same records as occurring amongst these same children during the subsequent school year of 1924-25.

1,016 Mal-nourished Children

	Scarlet fever	*Diphtheria*	*Whooping cough*	*Chicken-pox*	*Small-pox*	*Mumps*	*Totals*
No. of Children Infected...	37	5	6	29	14	12	103
Percentage.....	3.6	.49	.59	2.8	1.3	1.1	10.1

From these two tables, I and II, it will be seen that the total incidence of these six infections was greater amongst the *mal-nourished* than amongst the *well-nourished* in the proportion of 10.1 to 9.5.

Omitting scarlet fever, the total incidence of infection in the remaining five diseases was greater amongst the *well-nourished* than amongst the *mal-nourished*, the proportion of 8.4 to 6.7.

It is striking that 1,016 mal-nourished children happened to furnish exactly the same number of infections as 1,089 well-nourished, and that, therefore, the ratio of these two figures to each other represents the total apparent relative effect, so far as these six diseases are concerned of malnutrition in precipitating or of good nutrition in preventing an attack of infection. These two figures (1,016 and 1,089) are in proportion as ninety-five to 100; in other words where a *mal-nourished* group might yield 100 cases of these *six* infections a similar but *well-nourished* group might be expected to yield about ninety-four cases.

If now we omit scarlet fever the mal-nourished yielded sixty-six infections the well-nourished ninety-one infections. Hence in these *five* diseases (scarlet fever omitted) where a *mal-nourished* group might yield 100 cases of these five infections a similar but *well-nourished* group might be expected to yield about 128 cases.

Plan No. 1 was followed also in 1925-26 in an exactly parallel manner except that three separate sets of well-nourished children (about 1,000 in each set) were recorded instead of only one set; the number of mal-nourished children recorded was exactly the same as in the previous year. The standards of malnutrition, however, had changed as already described with the result that the school population of 1925-26 yielded only 16.7 of malnutrition as compared with 25 per cent in 1924-25.

TABLE III
(PLAN 1, A) 1925-26
Infections Occurring Amongst 1,051 Normal-Weight Children
(September, 1925–January 31, 1926, inclusive)
(Attending the Laura Secord, Alexandra and Beaconsfield Schools)

WELL-NOURISHED

	Scarlet fever	*Diphtheria*	*Whooping cough*	*Chicken-pox*	*Mumps*	*Measles*	*Totals*
No. of Children Infected...	1	2	——	24	158	——	185
Percentage.....	.09	.19	——	2.28	15.03	——	17.60

INFECTIONS OCCURRING AMONGST 1,027 NORMAL-WEIGHT CHILDREN
(September, 1925–January 31, 1926, inclusive)
(Attending General Gordon and Henry Hudson Schools)

WELL-NOURISHED

	Scarlet fever	*Diphtheria*	*Whooping cough*	*Chicken-pox*	*Mumps*	*Measles*	*Totals*
No. of Children Infected...	——	——	——	17	38	——	55
Percentage.....	——	——	——	1.65	3.70	——	5.35

INFECTIONS OCCURRING AMONGST 1,095 NORMAL-WEIGHT CHILDREN
(September, 1925–January 31, 1926, inclusive)
(Attending the Beaconsfield, Kitsilano and Central Schools)

WELL-NOURISHED

	Scarlet fever	*Diphtheria*	*Whooping cough*	*Chicken-pox*	*Mumps*	*Measles*	*Totals*
No. of Children Infected...	3	1	1	9	53	1	68
Percentage.....	.27	.09	.09	.82	4.84	.09	6.11

TABLE IV
(PLAN 1, B) 1925-26
INFECTIONS OCCURRING AMONGST 1,016 MAL-NOURISHED CHILDREN
(September, 1925–January 31, 1926, inclusive)
(Attending Alexandra, Laura Secord, Beaconsfield, Kitsilano, Central, Charles Dickens, Dawson, General Gordon and Henry Hudson Schools)

MAL-NOURISHED

	Scarlet fever	*Diphtheria*	*Whooping cough*	*Chicken-pox*	*Mumps*	*Measles*	*Totals*
No. of Children Infected...	1	1	2	15	79	——	98
Percentage.....	.09	.09	.19	1.47	7.77	——	9.64

From these two tables (III and IV) it will be seen that the incidence, of the six infections listed, upon the *well-nourished* was greater than upon the *mal-nourished* in the proportion of 9.7 to 9.64. This reverses the difference found in the previous year. (The six diseases here listed are the same as those listed in the previous year except that no cases of smallpox occurred in 1925-26 and but one case of measles which latter disease was not recorded in 1924-25).

If we count only the diseases which occurred in both years and then add together cases yielded by the mal-nourished of both years and by the well-nourished of both years we find that the five diseases common to both years yield the following:

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TABLE V

Table I	1,089	well-nourished children yielded	86	infections		7.9%
Table III	3,173	" " " "	307	"		9.6%
	4,262	" " " "	393	"		9.2%
Table II	1,016	mal-nourished children yielded	89	infections		8.7%
Table IV	1,016	" " "	98	"		9.6%
	2,032	" " "	187	"		9.2%

SUMMARY PLAN 1

Plan 1 therefore, shows no appreciable difference between the mal-nourished and well-nourished as to the *total percentage* affected by these infections.

THE RESULTS ON PLAN 2

TABLE VI

(*1924-25—First Investigation*)

Plan 2.—In carrying out this investigation it was necessary to discover the number of children who suffered from infectious disease and then to establish the nutritional status of each child as it was before infection. A comparison of the records of the infections occurring during the school year of 1924-25 with the height-weight-age records of the same year revealed the necessary information and showed the following result:

MAL-NOURISHMENT OCCURRING AMONGST 739 CHILDREN WHO SUFFERED FROM INFECTIOUS DISEASES

The facts of infection amongst these children during the school year 1924-25 was established from the school medical records. For each such infected child the nutritional status in September, 1924, was determined from the same records.

Note.—The nutritional standards used in 1924-25 established 25 per cent as the proportion of malnutrition amongst the general school population of 16,242 children.

739 INFECTED CHILDREN

	Scarlet fever	*Diphtheria*	*Measles*	*Whooping cough*	*Mumps*	*Chicken-pox*	*Small-pox*	*Totals*
Mal-nourished	53	6	0	11	45	48	14	177
Well-nourished	96	20	1	40	174	187	44	562
	149	26	1	51	219	235	58	739

SAME IN PERCENTAGES

	Scarlet fever	*Diphtheria*	*Measles*	*Whooping cough*	*Mumps*	*Chicken-pox*	*Small-pox*	*Totals*
Mal-nourished	35.5	23.0	0	21.5	20.5	20.4	24.1	23.8
Well-nourished	64.5	77.0	100.0	78.5	79.5	79.6	75.9	76.2
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Since, for these 739 children, the *normal* distribution of total infection would have been 25 per cent to the mal-nourished, 75 per cent to the well-nourished, the total *actual* incidence of infection is seen, from the above tables, to have been *slightly greater on the well-nourished*, in the ratio of 76.2 to 75; conversely, that the mal-nourished relatively escaped infection, in the proportion of 23.8 to 25.

TABLE VII

(1924-25—SECOND INVESTIGATION)

Malnourishment Occurring Amongst 246 Children Who Suffered from Infectious Diseases

This second investigation of the 1924-25 children differed from the first investigation (Table VI) only in that it was done somewhat later in the year. The malnutrition in the general school population was, of course, 25 per cent here also.

246 INFECTED CHILDREN

	Scarlet fever	*Diphtheria*	*Measles*	*Whooping cough*	*Mumps*	*Chicken-pox*	*Small-pox*	*Totals*
Mal-nourished	15	5	0	3	14	37	11	85
Well-nourished	33	8	2	7	50	46	30	176
	48	13	2	10	64	83	41	261

THE SAME IN PERCENTAGES

	Scarlet fever	*Diphtheria*	*Measles*	*Whooping cough*	*Mumps*	*Chicken-pox*	*Small-pox*	*Totals*
Mal-nourished	31.25	38.4	0	30	22	44.6	27	32.5
Well-nourished	68.75	61.6	100	70	78	55.4	73	67.5
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The incidence of infection in these 246 children was greater on the mal-nourished in the proportions of 32.5 to 25; and conversely less on the well-nourished in the proportions of 67.5 to 75.

This table is given chiefly to illustrate (*a*) the variability of the figures obtained at different times and especially (*b*) the "fallacies of small numbers." The former point (*a*) is strikingly illustrated by comparing the chickenpox figures in Table VI, with those of Table VII. In Table V, 235 cases of chickenpox showed but 20 per cent of malnutrition or one case mal-nourished to four well-nourished. In Table VI, eighty-three cases of chickenpox showed 44.6 per cent of malnutrition, the mal-nourished forming nearly one half the total, or about four cases mal-nourished to five well-nourished. The latter point (*b*) is illustrated obviously by measles; but also by whooping cough, in which the transfer of one case from the mal-nourished to the well-nourished group would result in altering the percentage of malnutrition from 30 per cent to 20 per cent.

TABLE IX

(1925-26)

Mallnourishment Occurring Amongst 875 Children Who Suffered from Infectious Diseases

	Scarlet fever	*Diphtheria*	*Measles*	*Whooping cough*	*Mumps*	*Chicken-pox*	*Totals*
Mal-nourished	6	4	0	3	137	19	169
Well-nourished	9	15	5	11	576	90	706
	15	19	5	14	713	109	875

THE SAME WITH PERCENTAGES

	Scarlet fever	*Diphtheria*	*Measles*	*Whooping cough*	*Mumps*	*Chicken-pox*	*Totals*
Mal-nourished	40.0	21.0	0	21.4	19.2	17.4	19.4
Well-nourished	60.0	79.0	100	78.6	80.8	82.6	80.6
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The total incidence of the mal-nourished is 19.4 per cent as compared with the well-nourished of 16.7 per cent and indicates a possible effect of malnutrition in precipitating about 2.7 per cent of the total cases.

COMPARISON OF RESULTS OF PLAN 1 AND PLAN 2

In Plan 1, a number of well children, well-nourished, and an equal number of well children, mal-nourished, were examined to discover how many cases of infection each group would yield; in Plan 2 the converse procedure was followed; a given number of infected children were examined to ascertain their status of nutrition previous to infection. The former plan gives directly comparable figures, showing whether or not the well-nourished or the mal-nourished yielded the larger number of cases. The latter plan takes into account the relative number of the well-nourished and mal-nourished in the general run of children, and compares with this the relative numbers of well-nourished and mal-nourished amongst infected children.

DISCUSSION

From the above tables it will be seen that:

1. Small groups of cases may show a greater incidence on the mal-nourished; other small groups on the well-nourished; but such differences tend to disappear as larger groups are examined.

2 The average incidence appears greater amongst the mal-nourished by about 3 per cent (Plan 1) to 6 per cent (Plan 2).

But it must be remembered that the status of the mal-nourished and well-nourished was determined in September of 1924 and of 1925; the diseases occurring at various intervals thereafter to June (1924-25) and to January (1925-26). In the meantime, under the ministrations of the School Health Department, the nutritional status of each group gradually improved. This improvement was determined in 1925-26 to be approximately 45 per cent, *i.e.*, 16.7 per cent malnutrition in September, about 9.1 per cent in May. Doubtless some children who were well-nourished in September became mal-nourished during the school year; but the

changes in the other direction were so great as to offset this and modify the figures for malnourishment by about 7 per cent of the total children.

Hence the conclusion that the incidence of total infection of the six diseases dealt with in the schools is not affected to an appreciable extent by the malnutrition or otherwise of the school children, each group, well-nourished and mal-nourished, showing practically identical incidence.

3. The incidence in different individual diseases varies much in the various tables, and is not consistent for any one disease. The existence of variation in itself throws doubt upon the existence of a *general* resistance to infection, lowerable by a *general* cause, such as malnutrition; for if a *general* resistance existed and was lowered to any one disease, it would seem reasonable to suppose it would necessarily be lowered to all. But where our tables show the resistance apparently lowered quite definitely to scarlet fever, they also show that it was at the same time raised to chickenpox (Tables I and II); and similarly in various degrees in other tables.

Concerning scarlet fever, it may be worth while to point out that a previous investigation (Kobrak, *Jour. Am. Med. Ass.*, Nov. 2, 1920), observed exactly the opposite incidence for this disease, concluding that scarlet fever incidence corresponded with wealth and over-nutrition. He quotes also in Berlin under the pre-war conditions of 1911, 6772 cases; in 1918 and 1919 when malnutrition was the rule, 1962 and 1622 cases respectively. We do not think that he has made his point, but his figures certainly do not support the teaching that malnutrition conduces to infection.

4. Recent experiments by Spaeth and others show little if any lowering of resistance to infection, sometimes quite the reverse, as the result of fatigue and of malnourishment. It is therefore well to consider carefully our teachings in this line and investigate further before reiterating daily to all comers as infallible and universal a doctrine, which daily experiment and every day observations shows to have very many exceptions, contradictions and discrepancies.

Conclusions.—This investigation of about 8,000 records of school children in Vancouver yields no evidence of any relation between malnutrition and the incidence of infection; each group, well-nourished and mal-nourished, showing practically identical incidence of infection.

Method for Immediate Treatment of Fractured Patella.—In the method devised by Frank P. Corrigan, Cleveland, the adhesive plaster is first applied above and below the knee, and the lower plaster strips as they converge pass through a slotlike opening in the converging plaster extension which has been applied and allowed to set well on the skin of the injured leg, a flattened cylinder of cardboard is placed over the knee, the ends curving up in like a cow's horn, above and below; a pad about four inches in circumference is placed on top of it immediately over the patella. A plaster cast is then applied to the leg in such a way that the ends of the flattened cardboard cylinder are left outside. The pad causes the plaster to harden in the form of a dome over the patella region, thus rendering the fracture region accessible for observation. The cardboard cylinder and pad are both removed when the cast has hardened. The carboard cylinder, curved in a semicircle, leaves slotlike openings above and below the patella. This leaves the region of the fracture readily accessible and permits adjustment of the extension apparatus which has been previously applied. Incorporated into the cast above and below the knee are two hooks or rings; these can be fixed in place by wire buried in the plaster. Corrigan has used, in some cases, hooks that have been soldered to flexible sheet brass or aluminum plates. Picture wire is securely attached to the ends of the extending adhesive plasters. The other ends of the wires are secured to turnbuckles and the extension applied above and below b yattaching to the hooks and screwing up the turnbuckles to required tension.—*Jour. Am. Med. Ass.*, Aug. 7, 1926. ....

EXPECTATIONS AND REALIZATIONS FROM ROUTINE ROENTGENOLOGICAL GASTRO-INTESTINAL EXAMINATION

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IT is come to be an accepted usage in all medical practice, that in any condition developing abdominal symptoms the x-ray examination will sooner or later be employed to assist in supplying information to the internist and surgeon. There are many diverse methods of approach to a problem presenting abdominal signs, and we are now concerned only with x-ray methods. These also present different angles. We have the gastro-intestinal examination, using the barium meal and barium enema; the renal examination, direct and with the aid of pyelograms; cholecystography using tetraiodophenolphthalein, and the use of gas inflation of the abdominal cavity to visualize organs and morbid conditions. The one in greatest use, probably, is the gastro-intestinal and this method often provides a great amount of information. In fact so frequently is information forthcoming that it has come to be accepted in a most matter of fact mood. Just what do we expect from this procedure? With some physicians there is a tendency to expect too little, again some physicians are prone to expect too much.

The condition found in the course of a routine gastro-intestinal search fall into several classes, which may be grouped as follows:

1. Those cases in which the clinical, provisional diagnosis coincides with what the roentgenologist reports, and with what is found at operation.

2. Those cases in which the clinical findings and x-ray diagnosis fail to agree, or those cases in which some x-ray finding comes as a surprise to the preconceived opinion of clinician and roentgenologist—accidental findings.

The first group which comprises the lesions most frequently found includes those where a good history is available, where the salient points of the history fall into the confines of a more or less definite syndrome, and where the clinical signs are corroborative of the indications gleaned from the history.

In this type of case the patient is referred to the x-ray department with a well established diagnosis, and it remains for us to add our quota of information towards confirming or modifying the original opinion. We are all glad when such cases are presented, and it is found that internist and roentgenologist have arrived at the same conclusion by different methods. If anything further is needed, it is supplied by a surgeon's report that his skill has been able to remedy the ravages of disease thus indicated.

In our first group several conditions so frequently appear that they form the bulk of all our statistics. They may be named in the order of frequency of discovery: (1) duodenal ulcer; (2) appendicitis; (3) adhesions; (4) gastric carcinoma; (5) gall bladder disease.

This list was compiled from several statistics by men of good standing and is in the main correct. There is one difference as I have found in our clinic. I would be inclined to place gall bladder disease either second or perhaps third in the list.

May we sketchily summarize a few points about these, our commonest lesions.

Duodenal ulcer from the clinical side presents a history which indicates in the greater number of cases quite definitely the site of lesion. Such classical symptoms as pain, an hour or two after meals, relieved by taking food; hyperacidity; flatulence; tenderness in the right hypochondrium with or without hæmatemesis or melæna make for clarity of diagnosis; yet we all know the silent duodenal ulcer which perforates without previous history. The x-ray examination is

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exact as a diagnostic agent in a high percentage of cases. The Mayo figures being as high as 97 per cent correct; the x-ray shows a definite series of findings, of which the niche is the most important. Next to it is spasm with deformity of the duodenum, followed in order by such signs as hyperperistalsis, and a spastic colon. Grouped with duodenal ulcer may be placed *pyloric ulcer,* which in its early stages shows the same signs as duodenal ulcer, and in its later stages gives rise to pyloric obstruction and the huge retention stomach, which on the x-ray plate is self diagnostic.

Appendicitis in its acute manifestations has no place in this paper; but the lurking, backsliding undetermined appendix with its multiform group of symptoms is always a bugbear with us all. This troublesome vestigial remnant may and does simulate almost anything. The owner of such an organ may suffer alone, or under the advice of sundry physicians until he is finally x-rayed. What the diagnosis was before x-ray, may vary; and what does the x-ray show? There may be several findings, the chief of which are, an appendix tender on palpation under the fluoroscope, with fixation or kinking; some change in shape or position, or beading with delay in emptying. Practically any of these latter with tenderness is sufficient to make a diagnosis, if the appendix is visualized and either the surgeon or pathologist will back up such a diagnosis. I say either the surgeon or pathologist because many an appendix which the surgeon finds adherent, bound down, twisted upon itself and mechanically imperfect looks perfectly normal by the time the surgeon has carefully straightened it out by dissection.

Adhesions are frequently due to an act of God, but they occur with suspicious frequency in the footsteps of that group of God's anointed, the surgeons. I, who live in a glass house, would not dare to cast a stone not even such a mythical one as the fugitive gall stone; but it is only reasonable to assume that the most careful and skilful operator may so injure the delicate peritoneum by his lightest and most circumspect touch that it may rise in its might and do wonders by adhesions that put to shame the well-known Scotch, who are supposed to be close, and also to stick close to one another. The x-ray diagnosis is usually easy. In the small bowel we see frequently the appearance of hammocking, coils of bowel suspended from their extremities. In the pelvis the bowel may be bound into a glutinous mass, immovable by palpation under the fluoroscope. Then again the appearance of a distended bowel suspended by bands, or bound down by adhesions, or by deformity in fixed portions of the bowel is well known to you all.

Gastric carcinoma.—Quoting from a current text, "gastric cancer evidences itself in an insidious manner; but finally by persistent vomiting, hæmatemesis, constant pain, emaciation, anæmia, cachexia and local tumour, the diagnosis is established. This case should be x-rayed to determine methods and amount of relief; the x-ray will show defect in the stomach outline and will indicate whether it is possible to do a short circuiting operation or not; but this case should have been seen sooner. Don't wait to be sure, send him to the roentgenologist before you are sure.

A case of gastric cancer will give varying x-ray pictures but as the great majority of them occur on the lesser curvature, from the pylorus to the cardia in order of frequency we get an almost similar set of findings in all; but here may I emphasize that a stomach otherwise negative which presents a patent pylorus with rapidity in emptying time is a stomach that most likely harbors an early carcinoma, and this finding is in most cases sufficient evidence on which to advise laparotomy. The surgeon may on such advice open an abdomen and find nothing but he will find a lot of early, possibly operable gastric cancers.

Gall bladder.—To complete this group I include gall bladder disease and I mean such cases as indicate a direct approach to the gall bladder as the most likely site of trouble. To generalize, such a patient very often appears as a stout, plethoric, high breasted, well-fed, vigorous female, distinctly of the hypertonic class; her history is full of gas, gas in and coming from the stomach, gas in and from the bowel, with or without jaundice, with or without colic, but usually with pain in the epigastrium or in the right hypocondrium, or referred pain in either shoulder or in the dorsal spine. Thanks to Dr. Evarts Graham of St. Louis we now give this patient 3.5 grams of tetraiodophenolphthalein in 40 c.c. of water as an intravenous injection and the subsequent x-rays tell the tale.

Now to approach humbly a class of cases which

provoke and provide our frequent medical society discussions; cases where a malady is certainly apparent, but the exact location of the lesion is wrapped in mystery. These cases I will not take in their anatomical sequence but rather in the order of their most frequent appearance in our clinic, and with your indulgence I will cite case histories where they appear to give added information.

There are a large number of cases sent in each year to the x-ray department diagnosed variously as gastric ulcer, duodenal ulcer or indigestion; as the examination progresses we become assured that there is no lesion in the stomach or upper gut; frequently they have already parted with their appendix. These patients are in the age group from twenty-five to forty-five years, many of them in the twenty-five to thirty-five year group. The stomach examination is negative, but at this same examination signs appear that point to a different diagnosis; they are several, and all point one way. Occasionally on the stomach plates we see the shadows of gall stones, or we may see the shadow of a gall bladder. Such findings are definite and final. At other times we may see deformity of the duodenum caused by pressure from without, or deformity of the duodenum caused by adhesions, or deformity of the hepatic flexure by pressure from without, or deformity of the hepatic flexure by adhesions, or pylorospasm, duodenal spasm or rapidity in the emptying time of the stomach with hyperperistalsis. These are the indirect signs of gall bladder disease and when found call for an examination of the gall bladder with the technique above described. It may be thought that I am overstressing gall bladder, but it is a fact that more diseased gall bladders are being recognized as our technique is perfected, and surgeons are recognizing previously unsuspected pathological conditions in examination of gall bladders and are removing successfully an increasing number of such diseased organs. Russel Carman in the *Journal of Radiology* quotes McCarthy of the Mayo clinic to the effect that in five thousand gall bladders examined in sequence he found only seventeen with no demonstrable pathological condition. There is a lot of thought in a statement like that. This same authority and others, including Graham, state that contrary to usual opinion the gall bladder containing thin fluid bile is as frequently diseased as the one containing thick viscous bile. This diseased gall bladder may contain stones, pus, sand or may show only chronic inflammatory changes; or it may be affected from without by adhesions caused by perihepatitis, or by congenital bands; lately one of our surgeons operated on an x-ray diagnosis of adhesions to the gall bladder and found a definite band deforming the sac. This band was evidently congenital. He removed the band and left *in situ* a healthy gall bladder. He was criticized for leaving the gall bladder, but his action has been approved by nature for the patient has had no further symptoms.

Another illustrative case from the same region: a patient came to us with a history which had led the clinician to make a diagnosis of gastric ulcer. The x-ray examination showed under the fluoroscope and on the early plate a large intrusion into the stomach shadow from below. This was not a cancer of the stomach and I made a diagnosis of pancreatitis with enlargement of the body of the pancreas. On operation this condition was found. The gall bladder was removed, duct drainage instituted and the patient is now well.

Another case examined radiographically this winter gave a history of stomach trouble for about one year with nausea, occasional vomiting. pain after food and was referred to the radiologist with a diagnosis of gastric ulcer. The x-ray showed distortion of the stomach by a pancreatic mass; at laparotomy the head of the pancreas was found to be enlarged, hard and carcinomatous. The patient died in a few months.

L. J. Carter describes a group of cases with adhesions in the right lower quadrant giving symptoms in the right upper quadrant and epigastrium. This type of case we all know, but the x-ray is practically the only method which clears up the diagnostic field.

Then there are the people with gastric histories, who show on x-ray search, definite evidence of some lesion of the appendix. A quoted case will best cover this type: Miss S., twenty years of age, referred by Dr. Kelly with a story as follows: pain in the epigastrium, made worse by food, relieved by vomiting, loss of weight, anæmia and lately daily vomiting. The x-ray showed a kinked, deformed, tender appendix, not previously tender; after the operation

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of appendectomy there were no further symptoms.

In the large bowel itself we occasionally find unsuspected carcinoma; either the massive type as in the cæcum, or the annular type in the transverse colon or in the sigmoid. Another type of lesion found in the large bowel is exemplified by the following history: Dr. K., a busy practitioner in the country with the usual history of irregular meal hours began to suffer from pain in the epigastrium and in the region of the gall bladder; there was, occasional vomiting and blood in the stools; and his case was diagnosed as duodenal ulcer. The x-ray plate showed both stomach and duodenum clear, but gave the picture of marked diverticulitis. Operation was not considered but under colonic treatment and a careful dietary his condition improved and he was able to carry on his work. Diverticulitis is a fairly common finding, and a condition almost its opposite namely, spastic colitis, is now found quite frequently as an associated condition with other lesions.

The foregoing are the commoner out-of-the-way findings. Others are found frequently enough to warrant mention. Lesions of the œsophagus are usually of the obstructive form; benign lesions give a stricture with symmetrical borders and concentric opening. Carcinoma shows under the x-ray the well-known moth eaten outline, eccentric opening and progressive occlusion. Diverticula of the œsophagus and stomach are not common and when accidently found explain themselves. Leon Lewald describes accidental findings of thoracic stomach and differentiates carefully this condition, hernia of the diaphragm and eventration of the diaphragm. When suddenly confronted by such an abnormality, one is certainly given pause, but careful scrutiny and fluoroscopic examination will clear these up quickly.

There is now another pathological condition that induces gastric symptoms and of which the location of its lesions and their manifestations are often remote. Straight pulmonary tuberculosis may give rise to anorexia, vomiting, loss of weight, and suggest a gastric condition. In diaphragmatic pleurisy the symptoms frequently are even more indicative of a lesion in the upper gastro-intestinal tract. Here the fluoroscope is of the greatest aid. Again in the course of a tubercular pulmonary infection the patient often develops gastro-intestinal symptoms which invite investigation by the barium meal; the stomach and ileum may be found clear but in the cæcum we may find signs of tubercular infection which show a very sharp cut set of x-ray pictures. They are, first, delay in the ileum, second, filling defect in the cæcum, and third, hyperperistalsis in the large bowel associated with spasm. We have closely observed a large number of these cases at the St. John County Hospital and Dr. Farris and I have accepted the above triad of findings as absolute in the diagnosis. Where one or other alone is present, we usually call the case suspicious; where all are present our diagnosis is clear. These findings in tuberculosis are also vouched for by Lawrason Brown and Homer L. Samson at Saranac. Some one may ask have you forgotten gastric ulcer? I have not, but we see so few that I would almost class this as an accidental finding, they are usually on the lesser curvature and are often excavated; an odd one is found near the pylorus.

In preparation of this short crowded paper, I have confined my reading to the x-ray journals of the last five years. The clinical material has been gleaned from the St. John General Public Hospital, St. John County Hospital and the Lancaster Hospital. Deductions have been drawn only from operative cases or autopsies, and I have tried to encompass in a short paper some facts I hope may aid you in judging in what cases the x-ray will be of assistance. I have tried also to show that the old syndromes are frequently misleading as is proven when all our cards are on the table.

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CARCINOMA OF THE PROSTATE

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CANCER of the prostate is a not uncommon disease, encountered more frequently than suspected, being overshadowed by the more usual simple enlargement. Without entering far into the barren waste of statistics all recent figures show that from 15 to 20 per cent of prostates removed at operation and submitted to examination exhibit positive evidence of malignancy; while it is estimated that nearly one in eight of those giving rise to symptoms are in a similar class. This may be only a small area, possibly of Oertel's degenerative type, but nevertheless passed by competent pathologists as genuine, just as, *mutatis mutandis*, carcinomatous nodules are found in certain fibroid uteri.

Malignant disease of the prostate is always adenocarcinoma; a connective tissue stroma enclosing epithelial cells; and it is upon the relative development of the enclosing wall, and the exigent contents, that the consistency, and, largely, the rate of growth depends.

It is useful just here to recall a few simple but essential facts in anatomy. The apex of the prostate rests upon the posterior layer of the triangular ligament, in other words the pelvic fascia; beneath, it is separated from the rectum by the fascia of Denonvilliers, a developmental prolongation from the peritoneum forming the pouch of Douglas. Secondly, the prostate has a true capsule formed of connective tissue, continuous with the ligaments running forward, backward, and laterally, to the pelvic wall which is pierced by the vasa, blood vessels, and lymphatics. Thirdly, the lymphatics, following these lines, lead to the glands in the inguinal region, but much more often to those at the bifurcation of the common iliacs and beside the promontory, from whence they follow upward along the spine, even to the left supraclavicular region.

Appearance.—Carcinoma announces itself in two forms. The first, small self contained, spreading locally; whilst the second, and, unfortunately clinically the most frequent, is a general or disseminated metastasis.

The first, or local invasion, being prevented by the fascia of Denonvilliers from directly attacking the bowel, and likewise, it would seem, having as little inclination to perforate the bladder base, insinuates itself along the pubo-prostatic ligaments forward to the root of the penis, or, more commonly, by the vasa and vesiculæ, outward and backward in the cellular tissue to surround the pelvic colon even to causing obstruction.

On the other hand, the more common generalized form exhibits a particular predilection for early and remote metastases in bone, particularly the bones composing the pelvic girdle and spinal column, proclaiming its presence there by various unaccountable pains. Rather less frequently, but possibly more puzzling, are enlargements of the inguinal, lumbar, or left supraclavicular glands; an inoffensive lump of great hardness, but most tenacious attachment to important structures. Lastly, it may be found in viscera, more often than not in the lung.

Symptoms.—Having a long period of latency the disease may have attained a great foothold before declaring itself, being only found when searching for the origin of some distant complication such as a sciatica, growth in the lung, or what not, the local symptoms being in abeyance. On the other hand, there may have been a year or more of prostatism whose onset is, at first, usually distinguished, rather by *difficulty* in micturition, with tenesmus, as distinguished from *frequency*, especially the nocturnal frequency, of simple prostatic hypertrophy, while the feeling of tenesmus is not relieved by catheterization. Occasionally, just as in simple enlargement, the onset is announced by retention or, as it may be, by pain.

Pain, especially early pain, may be due to pressure within distending the capsule, but more frequently is caused by enlarging glands press-

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ing upon some of the sacral nerves. This is a dull continuous aching along the perineum in the sacral region, or down the sciatics; a persistent ache, not relieved by posture, not always accompanied by urinary frequency, but generally worse at night. Bleeding, as we have seen, is not so often in evidence since the bladder wall like the fascia of Denonvilliers, as aforesaid, does not seem to be easily pierced.

Difficulty and pain, therefore, rather than the frequency and bleeding of hypertrophy, may be said to be the cardinal introductory symptoms which, in a man past middle life, should assuredly excite suspicion. Nothing very definite to go upon; just a feeling that things do not correspond.

Signs.—Following upon these things one finds little by instrumental examination. The leading feature again is, perhaps, difficulty in introducing the cystoscope. The narrowing is markedly resilient, sometimes requiring dilatation before the beak will pass, and, when it does slip by, there is a feeling as of a tight clinging collar through which the instrument seems to grate reluctantly.

Once within the cavity there is little to be seen, since in the beginning there are no projections nor ulcers. The only thing to be recognized is, when present, an interureteric bar, a possession common to both the growth and to the small fibrous prostate; the semilunes of simple adenoma being conspicuous by their absence. Recognition, therefore, is left almost wholly to the sense of touch. While simple adenoma is smooth, moist, elastic, defined, slightly moveable in the pelvic floor, with well marked lateral grooves, carcinoma on the other hand, if at all true to form, is hard, almost stoney, certainly in its primary condition, inelastic.

Diagnosis.—The mere presence of obvious hypertrophy is not conclusive against cancer—the two may be associated—in which case the new growth lies, as a rule, behind or below the adenomatous masses, owing to the preference of cancer for the so-called third lobe.

In making an examination the first thing to be observed is a change in consistency; an increase in density. This density is accompanied by an increased thickness of the prostatic floor, better observed at the apex, where the often accompanying inflammation seems to broaden the membranous urethra. There seems often to be a lack of definition especially of the lateral sulci. The gland runs evenly to the pelvic wall while the heart shaped depression and the median fissure are not easily found.

Secondly, and in the majority of instances most easily recognized, is nodulation. Nodules, singly, or in numbers, always attract attention. They are of all signs quite the most important. They have a character all their own, resembling a well established Hunterian chancre, or a button felt through the cloth; hard, shotty centres melting indefinitely into the surrounding tissues. The enlargement in the early stages when not accompanied by hypertrophy, is not marked. Another picture is presented later when the growth has broken bounds. That most frequently observed shows a craggy nodulation on one or the other side, running backward to involve the vesicles or cellular tissue, which can hardly be mistaken, but a second development is decidedly confusing. In this condition the growth is soft, smooth, resilient, running riotously backward often beyond reach of the examining finger. The suspicious circumstance being its flatness; a plateau rather than a rounded eminence. Somewhat doughy in consistence rather than resilient. Above all it does not move; there is no spring in it. Look, then, carefully for induration; thickening with indefinite outlines; nodules firmer than the groundwork; stoney hardness anywhere, with fixation.

The most confusing difficulty in diagnosis is to distinguish the small, tough, fibrous prostate, which presents similar scanty cystoscopic outlines, and really only differs in many instances, chiefly in its degree of hardness, a sensation to be learned only by experience, and, negatively, by the absence of nodulation. The lateral sulci persist, while the downward concavity along the posterior border is still distinguishable. This form of prostate is more frequently associated with old standing kidney disease, especially the fibrotic type, and the more typical symptoms of prostatic obstruction.

Simple chronic inflammatory prostatitis may give rise to nodules even in the prostate itself, but these are rather continuous with the general substance of the gland, are generally tender, and the rest of the prostate is resilient. Here too, one can express pus or even bacteria, upon a slide.

Tubercular nodules are more apt to cause

confusion, but this infection has a habit of betraying itself in other localities before coming to the lower urinary tract. There are, however, occasions when it is nearly impossible to be exactly sure. Tuberculosis seldom gives rise to symptoms of prostatic obstruction. No great harm results from confusing the two, since obviously no one wishes to attempt removal, and partial operations are of equally dubious value. *Noli me tangere.*

There remains a third, and undeniable diagnostic resource, though alas, only of value when the disease has escaped by blood vessel or lymphatic to involve the osseous structures. When in doubt as to the real nature of a prostate consult the x-ray. Any lightening of the shadow, more especially concerning the bones of the pelvis girdle, vertebræ, or elsewhere, render the diagnosis certain and settle the question of further procedure.

Prognosis.—What, it may be asked, is the ultimate prognosis, the probable duration of life? This can only be estimated from the date of onset of the symptoms. General conditions, such as remote metastases in bone, glands, or occasionally viscera; sepsis in the urinary passages; local conditions from infiltration of the growth. Each and all must be given due consideration. Attempts to forecast the outlook from the apparent local rate of advance are not helpful. Statistics tell us that life is seldom prolonged beyond three years; my own experience, much less. The expectation is greatly lessened by interference.

Treatment.—Lastly: is there anything to be expected from operation? No one is better qualified to answer than Dr. Hugh Young. He has a radical perineal operation which, like all the others, removes part of the bladder base. Anyone who must live without control of his urine, is in pitiable case. He reports some cases of regained control, and no recurrence to date. He thinks rather better of partial removal, followed by radium needling, and later, massive doses per bladder and urethra, stating that in absence of sepsis and uræmia, much relief may be given to local symptoms, and even life itself may be prolonged. For the average, however, masterly inactivity or, at most, simple palliative measures, such as suprapubic drainage, must be considered imperative.

The "Royal Hospitals": The "Spital Sermon".—The annual ceremony in connection with the "Royal Hospitals" is one example of the medieval customs in which this country is so rich. The Easter banquet took place at the Mansion House following the preaching of the "Spital Sermon" at Christ Church, Newgate Street, earlier in the day. A large and distinguished company, which included many representatives of the corps diplomatique, accepted the invitation of the lord mayor and the lady mayoress. Proposing the toast of "Prosperity to the Royal Hospital," the lord mayor said these numbered five. St. Bartholomew's and St. Thomas' were dedicated to the treatment of the sick, Christ's to the education of the young, Bethlem to the alleviation of the insane, and Bridewell also to the education of the young, and, in modern times, to the correction and reclamation of unruly apprentices. St. Bartholomew's dated as far back as 1123. The others were founded, either by King Henry VIII or by his son Edward VI, in the sixteenth century. They were all in existence to-day, in the highest efficiency and prosperity. The preaching of the Spital Sermon had always been a great feature of Easter in the city. The sermon dated to "time out of mind." It was certainly preached as far back as five centuries ago. It was originally preached in the open air—first at the Spital Cross and afterward in St. Paul's churchyard. There have been occasions when attendance at the Spital Sermon must have been rather an ordeal, for they were told that in 1671 the preacher spoke for three hours, and his sermon, when printed, occupied 230 octavo pages of 27,000 words. The Bishop of Chichester, replying, said that when Queen Elizabeth was present on one occasion at the Spital Sermon she was accompanied by two bears, and after the service attended an exhibition of bear-baiting.—*J.A.M.A.*, June 5, 1926.

PSYCHOTHERAPY WITH SPECIAL REFERENCE TO PSYCHOANALYSIS

By Norman Viner, M.D.

Montreal

IN a limited paper one can animadvert but little to the history of psychotherapy, except to state that what constituted mental treatment in past days was almost exclusively physical. These extramental methods, including seclusion, rest, physio- and electro-therapeutics, and drugs, were on a par with efforts to brush back with a broom the inroads of the sea. About a generation ago Kraepelin by his more scientific classification of mental diseases pointed the way to the numerous subsequent studies which delved into, and tended to make more clear the underlying mechanisms of mental aberration. No small contributions in this sphere came from the earlier work of Janet and Bleuler, and of Putnam and Southard, but it was undoubtedly the epoch-making methods introduced by Freud which helped to clarify the mechanism of many mental divagations, and showed us a mode of interpreting and of modifying and controlling them.

One great drawback to the advance of research in this direction was the prejudging mental attitude which postulated an organic basis, or made a fetish of heredity in all mental disease. With mental disease definitely organic in nature, as for example general paresis, we do not propose to deal in this paper. To ignore heredity altogether would be as futile as to blind oneself to the existence of the various other factors. Nevertheless, one cannot too greatly condemn the tendency in derangements of mental function to adopt a fatalistic attitude —to fold one's arms, sit back and blame the condition on heredity.

In order to get an adequate idea of our problem it may be expected we should at the outset define insanity, but we must confess that insanity like sanity is indefinable and that technically it does not exist as a medical term but only as a legal one. Just as there are varying degrees of physical health so there are of mental health, and these variations are not absolute but relative in the mental sphere; so that whether one speaks of neuroses, psychoneuroses, neurasthenia, hysteria or psychoses, one is dealing in a general way with various shades of the same condition, call it sanity or insanity as you will. And very few of us there are, who are not "touched" in some degree, however great or small.

We are born a body with various organs, a strictly limited number of instincts inherited from our evolutionary ancestry, and a series of reflexes which increase to some extent afterwards. No sooner do we come into the world than we are subjected to a bombardment of external stimuli of increasing complexity with the consequent reactions to them on our part. These stimuli are everything we see or hear or feel through our environment, and these as they vary, elicit from our developing mind and body corresponding reactions, or reflexes. But just as the dog in Pavlov's and Cannon's experiments began to secrete saliva every time food was brought to him, continued to secrete it if a bell was rung at the same time, and finally ended up, through association of stimuli, by secreting saliva merely when the bell was rung, thus developing what is called a conditioned reflex, so in the course of our individual development our lives, our ideas and our organic reactions become a mass of conditioned reflexes. Assuming, then, for demonstration purposes that we have all been born with equally sound minds in sound bodies, we will differ from each other according to our accumulation of conditioned reflexes.

The critic will appositely rush in here and cry, "What about heredity?" As I intimated at the outset no one with a sound mind will question the importance of that factor—that we are at birth what we have in our germ plasm and its potentialities. That is admittedly unalterable and I greatly doubt whether anybody questions it. But it is what we do with that as a

foundation, that in later life makes us what we are. To deny that is to deny the element of free will, or if that term is now taboo in many circles, the denial implies that we are not the masters of our actions, that we are irresponsible, and such "determinism" would be the logical conclusion of the strict "heredity" school.

In any case recent researches, to mention but those of Myerson, would indicate that much of the so-called heredity—proof of previous neurological investigations, *e.g.*, those of the Kallikak family—was not as scientifically recorded as it might have been. That careful research into the family history of many normal individuals would bring forth a great many "taints", and, finally, that with a retrospect into our ever-multiplying individual ancestry we might all find things for which to be thankful, in that they have not appeared in ourselves.

A couple of generations ago a patient would have been asked, "Did your father have tuberculosis?" In our day the question has been changed to, "Did you live with him when he had it?" In other words we are more interested in the environment than in the heredity. We thus come to the modern point of view of mental disturbances—that they are the result of the reaction between the patient and his environment. In other words each individual is the sum-total of a series of mental attitudes conscious and unconscious, and these attitudes are the resultants of successive reactions between him and his environment from the day he was born.

To those who by some mischance are totally unaware of this field of knowledge one would have to—as one could—demonstrate in any individual his reaction to his environment especially in youth, and here we come to a crucial point in the way of illustration. Granting that we cannot alter germ-plasm and all that it connotes; put all that germ-plasm and all it connotes in the form of a new baby of average white ancestry into a Robinson Crusoe island, feed it during its infancy by some mysterious means, then let it run rampant. What will become of it? It will develop into a wild savage of few mental capabilities, but with a vast number of mental potentialities relatively undeveloped; while an infant savage with an average upbringing, in an average civilized environment will develop into an average social man. In other words we have a fixed number of bricks—plasm-cells—unalterable in their nature, from which can be erected a mansion or a barn. And that, in short, is what environment does with all of us in varying degree depending on our varying shades of adaptation; of reaction. Taking it for granted then that environment cannot alter the bricks—change the germ-plasm—it assuredly can arrange those bricks to erect a superstructure of varying kind. Environment does not alter the man's size or shape or colour or capacity, at least not in any basic sense. What it does do is to affect his ways of thinking, of behaving, and to a considerable degree, of feeling, in the sphere of emotional reaction. Since these things are in a general way the result of mental attitudes, produced by environment, what environment has done environment can undo. That is the basis of modern psychotherapy.

Where our ideas are contrary to the conventional pattern, broad though it be, we are "different", peculiar, eccentric, neurotic, crazy, or at the other extreme (and here extremes meet) a genius. When society condemns such an individual or when he himself feels that he is not in harmony with it, or if he suffers from various other discomforts, that individual becomes a potential psychiatric patient. The question then arises can the tangled skein of that person's ideas be unravelled, or, to use another simile, can that person who has strayed from the normal path, until he has lost himself in a maze, be shown how to retrace his steps, until he returns to the right path, and in the process perhaps learn how to walk more "straitly" in the future.

Since I have employed so many similes let me employ one more. Ten automobiles pass a certain spot every hour. There is a big rock in the road, all bump over it and are badly jarred. Nine of the drivers get out, look at the rock, make harsh comments and drive on. Within three or four blocks they have forgotten all about the incident. The tenth car, however, breaks down, and the driver swears it was all the fault of the rock. If so why did not the other cars break down? Is it not more likely that the car in question was already in a poor condition, and if not this rock then the next jar a block further would have had an equally disastrous effect? Similarly in the road

of life, a mental or nervous breakdown is frequently blamed, whether by physician or patient, on a death in the family, a financial loss, a disgrace, a physical accident, or a mere fright when more ultimate causes really lay in the background.

Now let us consider the treatment, as given in the past. The patient was sent to a sanatorium, or put to bed for eight weeks, or sent away for a change of scene, or given electricity. Otherwise, he was told that there was nothing the matter with him, that he ought to brace up, that he should be ashamed of himself, that he was just imagining things, that he ought to get a sound whipping, or that he would be given a good tonic which would fix him up, and—depressed or elated, somnolent or wakeful—this really sick, utterly miserable and consciously misunderstood victim was given a bromide mixture and hurried out of the office, with the anxious, though unspoken, prayer that he would get out quickly and stay out.

What is perhaps even more unwise than this is to regard as subjects only of organic disease patients presenting so-called neurasthenic or hypochondriac symptoms and complaining of definite physical symptoms, such for example as a little hyperacidity with mucus in the gastric secretion, and perhaps some substernal tenderness; symptoms extremely common in the neurotic. Of such cases the writer hardly dares contemplate the number mistreated, often for many years, and for whom the very element of suggestion of organic disease by the physician serves merely to intensify the symptoms.

What substitute have we then for measures so ineffective as these described? It is the method of Freud and its modifications. Stated very concisely this consists of a so-called mental catharsis, a spilling out of what is on the patient's mind. If it were only what is obviously on his mind, the conscious, he could go to the priest and be cured in an hour. But unfortunately, what is in his conscious mind is but a small part, and that is generally misinterpreted by the patient himself. There is in addition a huge tangled skein in his unconscious mind that the psychoanalyst helps him to evacuate and disentangle. He does this by dream analysis, by free associations of the patient to his own ideas, by controlled associations, to words given him by the doctor, by automatic writings, by analysis of the patient's daydreams, and even of dreams manufactured by the patient at the doctor's request. The physician is aided in guiding the patient by his own knowledge of symbolism, and of evolutional, primitive and actual psychology. The doctor does not force his own interpretations on the patient, as a rule, but by his knowledge of the symbolism he is enabled when necessary to stimulate the patient to make his own interpretations. As a result of this handling the various twists and kinks in the patient's mental lifetime are straightened out, and he is at last brought to realize the origin of each of his abnormal symptoms which then melt away like the snow before a summer sun. To one who is unacquainted with this method this might sound fantastic or mystical, like the workings of a complicated machine to a yokel, yet as disclosed by the results it is most cold-bloodedly revealing and instructive. The relation of this to the older psychotherapeutic methods might be typified by the difference between extracting an abscessed tooth and painting iodine on the gum to dull the pain. However, cases occur where this method is not completely effective, and there Freud advocates other methods of re-adjustment or of re-education. Thus, when the genesic urge is rampant, he intimates that the forces are to be diverted to sublimation, that is that they be externalized to art, to poetry, to social service or to mere work.

Freud in correlating his impressive results has formulated a rather cumbrous and obscure method, while enunciating a number of remarkable principles, and in the process has shocked a conventional world. He has dared to state that all the psychoneuroses, without denying that other factors may be contributory, have a sexual basis; he has postulated an infantile and childhood sexuality; he has adopted an Oedipus and a castration complex. He has dared to imply what our germplasm asserts, and what conventional make-believes insist on denying. He has ventured to propound in his sphere what Zangwill had already asserted in his own, "Man has imposed morality upon an immoral world," and has concluded that the repressions resulting from that artificial code are the cause of all the psychoneuroses, and some of the psychoses.

Such baldly stated is the position assumed by Freud; and what a potential one for misinterpretation, for misdirection, for antagonism, from a pietistic, a conventional, or as one might now say, from a fundamentalist world. Many of his followers inept, untrained, overenthusiastic, carrying some of his ideas to their logical conclusion, wallowed in a sea of theoretical filth.

The result was a reaction; the same reaction which for generations has discredited another valuable medical procedure, namely bleeding, on account of its previous abuse by surgeons and barbers. But this reaction had a more important and more humorous side. Many ethical psychiatrists in their zeal to keep their skirts clear rushed to the other extreme and began to smite this method hip and thigh, which is perhaps an appropriate way of expressing it. Not only did they assert their incredulity in regard to the question of infantile sexuality, and the ubiquitous adult sexuality, but they began to question the value of the complicated mechanism of interpretation and concluded with the assertion that any results attained were due, not to the bringing to the surface the solution of the various complexes, but to straight suggestion.

To analyze all these objections and reply would require space greatly beyond the bounds of this paper but one can at least summarize one's findings. Excluding entirely the psychoanalyst specialists, one might say that many of the most able psychiatrists and neurologists use this method consistently and persistently; that no method of psychiatric interpretation of the mental mechanisms is now considered satisfactory without utilizing the Freudian framework; and that no other method has had such an influence in the regeneration of modern psychology and in the establishment of mental hygiene.

Modern psychotherapy tries to extract the abscessed tooth and, in large measure, has been successful. To mix our similes again, it readjusts, cleans, and tightens up the automobile so that it is practically as good as new. It cannot make a Rolls-Royce out of a Ford. It cannot make a man better than the Lord created him. If a patient is both psychoneurotic and stupid or defective, psychotherapy though removing his psychoneurosis cannot make him bright or of normal intelligence, but it can repair the damage done by himself and may, in addition, give better direction to what he has started out with.

Of course in severe conflicts arising mainly from recent causes, and not traceable to early psychic trauma, and generally the patient is self-deceived on that score, the Freudian method is insufficient. The causes still operating must be removed or the patient helped by older psychotherapeutic measures to adjust himself. Undoubtedly whether there is a buried psychic past or not, actually present difficulties may arise, which may be more or less irremovable and here Freud's specific measures are of little avail. In such cases we often have to deal with other people than the patient to help smooth the road. If that too is impossible, we are reduced to training, to encouragement or to the counsel of resignation.

The psychoanalytic method is very effective in the psychoneuroses; is frequently helpful in removing the underlying causes in alcoholism, and even in drug addictions; is quite applicable in the conduct disorders of children; is occasionally of value, by interval treatment, in withholding recurrent psychotic attacks, and is beneficial as an adjuvant in the functional element that is so common a complication or sequel of organic disease.

In conclusion, whether one accepts all of Freud's theories or not, one cannot but admire the genius of a man who has evolved a mode of procedure which, in the hands of practitioners of his method, has become a most efficient weapon in conditions hitherto practically not amenable to treatment. His method tends to restore the mechanism to its original state of health and incidentally to teach the driver to handle it better in the future.

Action of Hepatic Extract in Hypertension.—The evidence presented by Ralph H. Major, Kansas City, Kan., at present is interpreted as showing that while liver extract is effective in certain cases of arterial hypertension, this is only very suggestive but not conclusive.—*Journal American Medical Association*, July 17, 1926.

Case Reports

A CASE OF SUB-PARATHYROID TETANY TREATED WITH COLLIP'S EXTRACT OF PARATHYROID

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Relatively few clinical reports of the use of Collip's extract of parathyroid glands have as yet been published, hence the following case seems worth recording.

A. C., male, now aged forty years, began in 1912 to show symptoms which gradually developed into the classical picture of exophthalmic goitre. An abnormal condition of the heart apparently developed at an early stage. Shortness of breath was complained of in 1916; dizzy spells and fainting began late in 1923. He was admitted to hospital on July 31, 1924, at which time the heart showed moderate enlargement, and there was marked fibrillation. Digitalis and Lugol's solution were administered, and he was kept in bed.

On October 27, 1924, Dr. B. J. Brandson resected the left thyroid lobe and isthmus, conserving the posterior capsule and a thin slice of the gland. The patient recovered from the operation very satisfactorily. After prolonged quinidine and digitalis treatment the heart returned to normal (March, 1925), and he was discharged in fair condition in May, 1925.

He was re-admitted to hospital on December 30, 1925, with recurrence of both exophthalmic goitre and heart symptoms. His basal metabolic rate at this time was plus 38 per cent. Digitalis and Lugol's solution were administered. The basal metabolic rate on January 30th was plus 28 per cent, and on February 3rd he was operated on by Dr. N. J. Maclean, who removed the right thyroid lobe, conserving the posterior capsule and between one-sixth and one-eighth of the lobe.

Numbness and tingling of the hands were noticed three or four days after operation. On February 12th the patient had a distinct tetanic spasm, with the usual symptoms in hand, forearm, and apparently laryngospasm; this lasted fifteen minutes. Blood taken immediately after the attack showed a serum calcium value of 6.7 mg. per 100 c.c., confirming a tetany due to parathyroid insufficiency. He was immediately placed on fifteen grains of calcium lactate every two hours. The symptoms disappeared, and the blood calcium rose very slightly. Calcium lactate was then decreased to six hour doses on the second day, and slight symptoms reappeared on the following day.

Collip's extract was started on February 18th. The subjective symptoms disappeared within a few hours, although Trousseau's sign could still

TABLE I
Effect of Collip's Extract on the Blood Calcium

Date	Parathyroid Extract units	Serum-Ca; mg. per 100 c.c.	
		Before injection	6 hours later
February 18	20	7.1	6.7
" 19	30	...	...
" 20	20	...	...
" 21	30	7.8	7.7
" 22 and 23	10 (each day)	...	...
" 24	10	8.8	...
" 25	10	8.4	...
" 26	10	8.9	...
" 27	10	...	...
" 28	10	7.9	8.5
March 1 to 4	10 (each day)	...	...
" 5	10	8.4	8.9
" 6 to 11	10 (each day)	...	...
" 12	10	6.7	7.6
" 13 to 20	10 (each day)	...	...

be elicited for several subsequent days. No calcium lactate was given during this period. The dosage and the effect on the blood calcium are shown in Table I. All injections were made at 8 a.m. See Table I.

Initially twenty or thirty units of the extract produced little definite effect on the serum calcium within six hours, but continued injection produced a definite increase, which, with the daily dose of only ten units, slowly fell towards the original figure. On March 20th the supply of the extract temporarily failed. On the 21st, at 8 p.m., slight symptoms of tetany were present. Calcium lactate was administered from the morning of the 22nd, ten grains each four hours, and continued till April 14th. During this period the patient complained only of numbness in hands and feet in the early morning. Trousseau's sign was absent. On March 31st, no calcium lactate having been given for ten hours before taking a blood sample, the serum calcium had fallen to 6.2 mg. On April 13th, with similar precaution, the figure was 6.6 mg. From April 15th to May 10th inclusive, Collip's extract and calcium lactate were both given, administration of the latter being withheld for at least ten hours before taking blood samples for analysis. (This precaution seems to have been omitted on April 15th). The essential details of this period are shown in Table II.

After May 10th no more extract was available, and it was decided, on account of its cost, to continue the calcium lactate treatment only, since it kept the patient practically free from symptoms. On May 25th serum calcium was 8.4 mg., and on the 27th, no calcium having been given for the previous thirty-six hours, it had fallen to 6.3 mg., from which it would seem reasonable to conclude that no hypertrophy of any remaining parathyroid tissue had taken place to this date.

Quinidine and digitalis were commenced immediately after operation. The heart condition gradually became normal, so that by May 30th physical examination and the electrocardiogram failed to reveal any abnormality. There was still slight heart enlargement.

Between the date of operation and May 30th a gain of weight of between twenty and twenty five pounds occurred. In spite of the fact that so much glandular tissue was left, slight signs of hypothyroidism became noticeable. On March 2nd the basal metabolic rate was minus 13 per cent, and on the 16th minus 10 per cent. On March 31st, on account of the gain in weight and other symptoms, thyroid extract (five grains) was commenced, and has since been given daily. The basal metabolic rate on April 10th was minus 7 per cent, and on May 27th the same figure.

The patient was discharged from hospital on May 30th, the only subjective symptom being slight nervousness. He came back for re-examination on July 15th. The heart was then functioning perfectly; there were no symptoms of tetany, though he had decreased the calcium lactate dose somewhat (thirty to forty grains a day only, and sometimes less), there were no symptoms of myxœdema, the basal metabolic rate was minus 4 per cent, and the serum calcium, fifteen hours after a dose of calcium lactate, was 9.8 mg. per 100 c.c. Calcium lactate was stopped on July 31st. Blood samples were taken, before breakfast on August 5th and 6th. The serum calcium was 9.9 and 9.4 mg. per 100 c.c. There were no subjective symptoms at this time, or since cessation of the calcium lactate.

Discussion of Results.—It is recognized that the

TABLE II

SECOND PERIOD OF ADMINISTRATION OF COLLIP'S EXTRACT

Date	*Parathyroid Extract units*	*Serum-Ca; mg. per 100 c.c.*		
		Before injection	*6 hours later*	*13 hours later*
April 15	25	6.7	6.1	...
" 16	25	6.2	7.8	8.0
" 17	10	7.2	...	...
" 18 to 22	10 (each day	...	...	...
" 23	10	7.3	...	...
" 24	10	...	...	...
" 25	25	...	...	...
" 26	10	6.4	...	...
" 27 to 30	10 (each day)	...	...	...
May 1	10	9.4	...	...
" 2 to 10	10 (each day)	...	...	...

parathyroid glands are very variable in position. Although the surgeon aimed at conserving sufficient thyroid tissue to prevent development of myxœdema, and avoid removal of all parathyroid tissue, yet in this particular case the parathyroid tissue in the vicinity of the thyroid must either have been completely removed or permanently damaged by circulatory disturbance. The tetany subsequently developing was partially controlled by calcium lactate, and much more completely by Collip's extract. The dose employed of the latter was deliberately kept low in order to facilitate hypertrophy of any trace of parathyroid tissue that remained. On May 27th, eighty-two days after operation, serum calcium did not indicate any such hypertrophy, though the patient's symptoms seemed more amenable to calcium lactate treatment. Within two months of this date, however, there has been a gratifying improvement, and the present height of calcium seems to justify the conclusion that some parathyroid tissue has at length hypertrophied sufficiently to maintain normal blood calcium.

The slight hypothyroid symptoms were effectively controlled by the thyroid dose employed. The recovery of the heart suggests that its former pathological condition was entirely secondary to the hyperthyroidism, and prompts the query whether it would not have returned to normal without specific medication, once the toxic source (the hyperthyroid condition) was removed.

The history of this case presents some parallel to that reported by Lisser and Shepardson (*Endocrinology*, 1926, Vol. IX, p. 383).

We wish to express our indebtedness to Drs. B. J. Brandson, N. J. Maclean, A. J. Burridge, and C. R. Gilmour, for permitting us to publish the details of this case, to the Eli Lilly Company for giving us a supply of "Para-thor-mone" (Collip's extract) at Dr. Collip's request, and to the Medical Research Committee of the University of Manitoba for purchasing a further supply for use with this case.

A CASE OF ACUTE YELLOW ATROPHY OF THE LIVER*

By O. A. Cannon, M.B.

Hamilton

The patient, M.A., was a married female, thirty-eight years of age, who had no illness of moment until a few months after her marriage thirteen years ago. At this time she was operated on for pelvic disease and, according to her story, her uterus, tubes and ovaries were removed. She had a stormy convalescence remaining in hospital for three months with drains in her pelvis and shortly after her discharge she had to return to the hospital for incision of an ischio-rectal abscess. Since this sickness she has suffered from the train of symptoms usually associated with the artificial menopause; headache, especially in the mornings, was most severe and intractable; for this, she was given various remedies, but for many years she relied on aspirin alone, taking huge quantities, as much as twelve tablets in a morning.

There is nothing of importance in her family history, except that she was one of five girls and each, as well as the mother, had a very unstable nervous system frequently taking hysterical spells over trivial matters.

The patient was first seen by me three years ago in consultation with the late Dr. Bingham. An attempt was made to exclude other causes of her headache. X-ray examinations were made and much laboratory work, including the Wassermann test, was done, without gaining any definite information. She was given glandular products without much success and she fell back once more upon her aspirin.

In February of this year, she again consulted me because of pain in her stomach and constipation. She showed nothing on physical examination, and apparently recovered on alkalis, cathartics and a suitable diet.

Following this she apparently remained quite well until June when she was called to Detroit, because of the serious illness of her sister. She was for several days without proper food and rest, and was very anxious about her sister. On June 9th, she was suddenly seized with pain in her stomach and right upper abdomen associated with nausea and vomiting. She came home on the following day and I saw her that evening. She had severe pain which was located at the costal margin just to the right of the mid-line. She was tender to touch in this region and over her stomach, and the vomiting continued. She had no rise of temperature and no abdominal distension or rigidity. Her liver could not be felt. It was necessary to give morphine to relieve her pain. The following day, the distress

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*Presented at a meeting of the staff, Hamilton General Hospital, January, 1926.

was less severe but jaundice was manifest in her sclera and mucous membranes. The urine was bile stained. By the 17th her jaundice had increased until she was a deep brown, her nausea and vomiting had ceased and she had very little pain except to say that she was conscious of a soreness in her right upper abdomen. Her stools had remained normal in colour; on some of my visits she showed a rise of temperature up to 100 degrees.

She was admitted to hospital at this date and the following observations were made: pulse 90, blood pressure 155-84, two abscessed teeth, the abdomen was not distended but was tender to the right of the umbilicus up to the costal margin; the liver dullness was decreased; white blood count 15,900, red blood count 4,336,000. The urine showed no abnormality except the presence of bile. On admission, she was quite comfortable and resting quietly. She was put on a fat free diet, liquids were given freely, sodium bicarbonate enemata were administered and a therapeutic light was placed over her liver. For three days she rested quietly, the nurses notes frequently recording the observation that she was comfortable. On the evening of the 20th, headache was complained of and with it her nausea and vomiting returned. She also had epigastric pain which was relieved by the vomiting of a greenish brown fluid. She seemed better next morning but at noon the nurse reported that she was drowsy and refusing food and two hours later that she could not be roused. Albumin appeared in her urine and the blood chemistry record showed urea 53.50, urea nitrogen 25, creatinin 3.2, sugar .128. The patient now became very restless and delirious, screaming and trying to get out of bed. She had muscular twitchings involving her whole body. She had involuntary movements of a greenish mucus mixed with fæces and she voided large quantities of orange coloured urine. Her jaundice seemed less pronounced. She was given glucose intravenously and subcutaneously. The pulse was now 140, the body rigid and the twitchings continuous. The breath was very sweet. Convulsions came on and, after four of these, respiration ceased. She died on the 22nd, thirteen days after the onset of the disease.

A diagnosis of acute yellow atrophy of the livery was made, which was confirmed at autopsy. Dr. Deadman's report is in part as follows: "The appendix and intestines appear normal. The mucosa of the stomach is catarrhal. The liver weighs 550 grams and is much shrunken. The capsule is smooth and of a dark colour. On section there are numerous yellow areas interspersed with areas of congestion. There is much focal necrosis. The gall bladder is small and is filled with greyish, grumous fluid. The bile ducts were patent. There were no calculi. Pancreas large and firm. Spleen weighs 100 grams. The kidneys show cloudy swelling and congestion of the pyramids."

Diagnosis was not easy as the case was not typical and for a time we wondered whether we had not overlooked some form of obstructive jaundice such as might arise from a stone in the common duct. The diagnosis was made on the fact that the case presented the three outstanding features of the disease, *viz.*: (1) jaundice, (2) a small liver, (3) typhoid symptoms following a period of malaise with jaundice.

The pain which at first was severe is most unusual in this disease and seemed to point in the direction of an obstructive jaundice. Bile continued to reach the intestine, however, which would indicate that if an obstruction were present it was not complete. The clearing of the jaundice late in the disease was against obstruction and, of course, the nervous symptoms were not explained by simple obstructive jaundice.

At the beginning our case might very well have been a case of acute catarrhal jaundice, except that the staining was too deep, the pain too severe and, of course, the severe terminal symptoms could not have occurred in simple catarrhal jaundice.

Chronic hæmolytic jaundice could be ruled out by the pain, the deep jaundice, the profound toxic symptoms at the end, the absence of former attacks or a family history of jaundice. This form of jaundice is seldom or never fatal.

Another condition to be borne in mind was leptospirosis ictero-hæmorrhagica (Weil's disease) which is a disease due to a specific spirochæte supposed to be propagated by means of infected rats. The best description of it is by Sailer who finds the disease not uncommon but infrequently recognized. It is characterized by spontaneous pains in the muscles, erythema, conjunctivitis and heralded in most instances by an initial chill and a high temperature. The jaundice which is usually present may be absent.

XUM

The liver is frequently enlarged and hæmorrhages are common. Urinary crises are to be expected after the first week. A fatal termination is not uncommon. Diagnosis is made by dark-field examination of the blood or by the injection of the urine into the guinea pig in which animal there is produced a characteristic group of symptoms terminating in death. The spirochæte can be recovered from the animal's tissues. In the case under review the symptoms differed widely from those of Weil's disease and there was thus no difficulty in excluding this condition.

Acute yellow atrophy of the liver is rare and cases of it in which there is no definite etiological factor are especially so. We hesitated, therefore in this case to make the diagnosis without finding some fact in the history to suggest a cause. She had never been pregnant, she did not have syphilis, she had never been exposed to chemicals such as are used in the manufacture of explosives, nor had she at any time been anæsthetized by chloroform. Acute yellow atrophy is a symptom-complex rather than a disease entity. It is not proven that the disease is primary in the liver. Most writers agree that, in these cases, there is a toxæmia which may originate in the liver or elsewhere in the body which injures or destroys liver cells and that following this autolysis takes place. It has been stated that the jaundice of early syphilis may develop into an atrophy and that as the spirochæte has never been found in these livers, it is held that the damage to the liver cells is done by toxins produced by the micro-organism elsewhere in the body. Liver cells already damaged by syphilis are susceptible to further injury from arsenic used in the treatment and autolysis may follow.

A pregnant woman with liver cells impaired by the toxæmia of pregnancy is similarly affected by the administration of chloroform. However, cases are reported of the condition following influenza, acute catarrhal jaundice, pneumonia and typhoid and it is not unreasonable to suppose that any infection capable of doing damage to liver cells may commence the process which ends in acute yellow atrophy. Our patient took large quantities of aspirin for many years. She had two abscessed teeth. It is possible that these facts may have played a part. We do know that she was a woman in the third decade —the susceptible age and sex; that she was of unstable nervous stock, and was fatigued and anxious at the time of the onset of her fatal illness. All these are described as predisposing factors.

The diagnosis being made, the treatment is not satisfactory. Most die; a few cases become chronic. Water, free movements, sugar and relief of the vomiting are indicated. The acidosis should be treated by alkalis and glucose.

Perhaps in the prevention of the condition there may be more success. It would appear wise not to administer chloroform to a pregnant woman, especially if she had shown signs of toxæmia or was jaundiced. Early syphilis should be treated with mercury, and the use of arsenic left to a later period. A study of industrial intoxications is recommended as some obscure cases have occurred in industries not in any way connected with the manufacture of explosives. Acute catarrhal jaundice should be more energetically treated with purgative, intestinal antiseptics, diuretics and sugar.

A CASE OF HÆMOTHORAX IN A NEW-BORN INFANT*

By S. G. Ross

Montreal

During the first two weeks of life, hæmorrhage from various causes is a comparatively frequent event. In order of frequency, birth trauma and hæmorrhagic disease of the newborn come first as causal factors; less frequent causes are congenital lues and sepsis.

The case which I am reporting is of interest in view of the localization of the hæmorrhage.

Baby F., born April 26, 1926, female.

Family history.—Mother and father alive and well. Mother twenty-seven years old, has seven children; no miscarriages; other children healthy; present labour normal, position L.O.A.

Personal history.—Patient born at term, birth weight 3540 gms. There was no asphyxia; she nursed well from birth; temperature was normal. During the first four days she lost 300 gms. in weight. On April 30th, (morning

* Read at the annual meeting of the Canadian Society for the Study of Diseases of Children, Gananoque, June, 1926.

of the fifth day) patient suddenly refused to nurse. Colour became pale, respirations rapid, shallow and somewhat laboured. Temperature rose to 100 degrees. There were periods of cyanosis, no cough, no direct evidence of cerebral irritation or pressure. On examination, the chest was dull to percussion on the right side, left side clear. On auscultation the breath sounds over right side of chest were distant and had a blowing quality around lower border of scapula. No râles were heard. Breath sounds over left lung normal. Heart was not displaced. Otherwise, the examination was negative. Three possibilities were considered in the diagnosis: (a) pneumonia, (b) atelectasis, (c) bleeding into the pleural cavity. The last was suggested on account of the appearance of the child and the sudden onset. Personally, I inclined to the first.

The patient was kept quiet and given oxygen by nasal catheter but died within a few hours.

Synopsis of autopsy report.—Baby F., age five days. The body was that of a well-developed and well-nourished child. The external examination revealed nothing of any importance. The most marked lesion was found to exist within the thorax. When the sternum was removed, the right pleural cavity was seen to be completely filled with fluid and clotted blood, the lung being greatly compressed and collapsed. A small amount of free blood was also present in the left pleural cavity.

On removing the right lung, the pleural surface was seen to be reddish in colour and studded throughout with dark red areas which appeared as clotted blood beneath the visceral pleura. The lung substance on section was reddish pink in colour, appeared collapsed and airless, but showed no evidence of consolidation. The left lung, when removed and examined, appeared quite normal. The thymus was not pathologically enlarged. The examination of the remaining organs demonstrated no gross lesion whatever.

Microscopical examination.—Sections of the right lung showed the pulmonary substance to be markedly collapsed with the alveolar spaces obliterated. Occasional areas show the presence of large, pale-staining, mononuclear cells within alveoli. In the sub-pleural region, separating the visceral pleura from the lung substance, large extravasations of blood are seen which, in certain locations, can be traced for some distance into the lung substance proper. In the sub-pleural regions a great deal of fibrin clot is seen, whereas in the pulmonary parenchyma the hæmorrhages are made up of red blood cells with very little fibrin. Microscopic examination reveals the fact that these hæmorrhages cannot be traced to, or connected with, any definite blood vessel or group of blood vessels. They appear as large, streaky hæmorrhagic extravasations and, owing to the fact that no definite rupture of a vessel can be demonstrated, they are most likely capillary in origin and most marked in the sub-pleural area. Histological examination of the remaining organs shows no pathological changes.

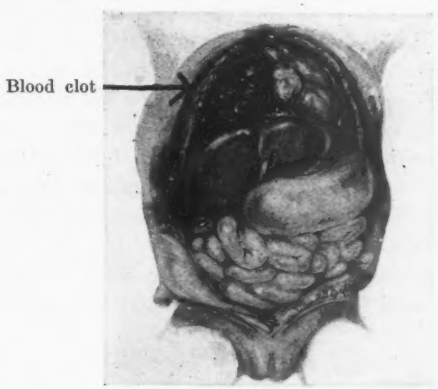


FIG. 1.—Drawing at necropsy showing the right pleural cavity filled with blood clot.

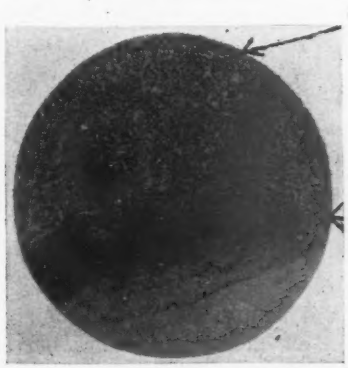


FIG. 2.—Photo micrograph of lung showing collection of blood beneath visceral pleura.

The following anatomical diagnosis is based on the gross and microscopical examination: *anatomical diagnosis: bilateral hæmothorax with*

multiple subpleural hæmorrhages. Compression atelectasis.

While hæmorrhage into the lungs is mentioned in connection with hæmorrhagic disease of the new-born, it is spoken of as a rare localization and actual reports of cases are hard to find. Massive hæmorrhage into the pleural cavity seems to be even a less frequent occurrence. I was able to find only one report of a case by Schukouski (*Zeitschrift. für Aertze.* 1903; *Abst. Jahrbuch. f. Kind.* 58: 1903, 319). In this case which occurred at age of thirty-six hours, there were practically identical findings with my case and, in addition, numerous small hæmorrhages into the lung tissue. This author found thickening of the adventitia of the blood vessels of the lung and, in places, thickening of the intima. In view of this vessel change he considered the possibility of a syphilitic lesion as being the cause of the hæmorrhage although there was nothing else in the findings to suggest this disease. In our own case there was no evidence of syphilis in the mother or child. It is unfortunate that the examination of the blood for the clotting and bleeding time was not done. At times this gives some aid in making a diagnosis of hæmorrhagic disease.

The evidence at hand suggests that this patient was suffering from hæmorrhagic disease of the new-born.

COMPLETE HEART BLOCK

Report of a Case*

By C. R. Bourne, M.D.

Assistant in Medicine, Montreal General Hospital

The interest in this contribution lies chiefly in the fact that heart block produced no subjective symptoms of heart disease.

A healthy-looking young Frenchwoman sought and obtained relief in April, 1926, for frequency and painful micturition, of six weeks' duration. She denied any former serious illness save appendicitis. There is no history of rheumatism or syphilis.

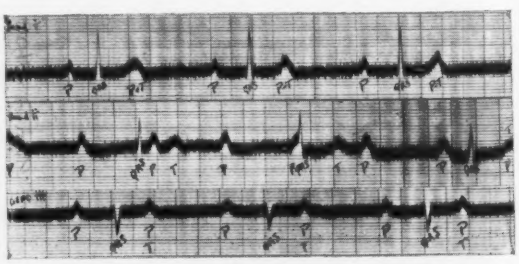
In Paris, in 1924, a slow pulse was found when appendectomy was performed, under a local anæsthetic, and a heart tracing showed "dissociation." She was told that this condition was of little importance, and that it must have been present since childhood. She was married in February, 1926. She was very active, doing her own house work, and ate and slept well. There was no history of syncope. Though requested to return, she declined, stating that "hospital was only for sick people."

Examination revealed tenderness in the bladder region but all other systems were negative, except the cardio-vascular. The pupils were equal and active. The urine was free from albumen and sugar. She was afebrile. The pulse rate was 36-38. Moderate exercise caused no acceleration nor dyspnœa. The Tycos sphygmanometer reading was 150-84. There was no œdema. The blood and spinal fluid Wassermann reactions were negative.

The heart dulness was increased to the left (13 cm.) and to the right (3½ cm.). The superior mediastinal dulness was normal.

The heart sounds were feeble. The apical first sound was accompanied by a soft murmur, transmitted to the axilla, and there was occasional reduplication of the second sound. At the aortic cartilage there was a soft, systolic murmur, not transmitted upwards.

Discussion.—With a pulse of forty per minute or less the diagnosis of heart block may be made. Vertigo or syncope are usual accompaniments.



Electrocardiogram —Complete auriculo-ventricular dissociation (heart block). Time marker: .2 seconds.

In leads (1) and (3) two auricular P-waves appear to each ventricular complex (QRS).

The complete dissociation is shown in lead (2) with the P-auricular rate—88 per minute and QRS-ventricular rate—36 per minute. There is a preponderance of the left ventricle. The dissociation has obtained for several years and is not due to digitalis. The Wassermann reaction is negative.

Osler in *The Principles and Practice of Medicine*, p. 779 gives several groups "It is usually a senile manifestation associated with

* From the medical out-patient department, Montreal General Hospital under Dr. D. G. Campbell.

arteriosclerosis. The cases in young adults and middle aged men are often myocardial and of syphilitic origin. There is a neurotic group in which all the features may be present, and in which post mortem no lesions have been found. .....the origin of the condition is probably vagal. The outlook in this class of cases is good; in the others it is a serious disease and usually fatal, though it may last for many years."

The presence of the preponderance of the left ventricle with the increase in arterial tension would place our case in the "myocardial" group, though syphilis is, probably, not a factor.

Although the patient is now free from subjective symptoms a favourable prognosis should not be given.

IMPACTED TOOTH WITH INFECTION

By J. I. Ferguson, M.D.

London, Ont.

A well-nourished woman, sixty-six years of age, was seen because of a severe pain in the left lower jaw, radiating from the eye and the front of the ear along the line of distribution of the fifth nerve, extending down the left side of the neck. This severe pain continued for three days with some swelling in the region of the inferior maxillary bone. The swelling gradually increased in size for a week until finally there was some swelling of the left eyelid. She was quite ill for several days, having a fever from 101° to 103°. The swelling was hard and tense with no sign of fluctuation. Hot applications were made, and morphine given to control the pain. The symptoms did not abate until the third week, when the swelling below the jaw showed some signs of fluctuation. Under an anæsthetic, the swelling was freely opened and some pus discharged. The swelling subsided, but the hardness of the lower jaw persisted. A slight fever persisted. An x-ray was taken, revealing an embedded unerupted molar tooth. This tooth was removed under an anæsthetic, considerable pus around the base was evacuated and the bone thoroughly curetted. The opening healed in a week and the induration on the side of the face gradually lessened. This case is reported with a view of drawing attention to the difficulty in diagnosing swellings about the lower jaw in elderly people, in whom the possibility of sarcoma or osteomyelitis must never be overlooked. The severe pain might also suggest tic douloureux or migraine. An x-ray picture is always very helpful in locating an infective focus in the dental canals.—*Bulletin of Harvey Club*, London Ont.

A CASE OF TUBAL PREGNANCY

By W. C. Harris, M.D.

The Western Counties Branch of the Medical Society of Nova Scotia held its annual meeting at Yarmouth on the 27th of May. Dr. W. C. Harris reported the case of a multipara who had not menstruated in February or March but had had a slight flow in April (1923). In May of that year she was seen by Dr. Harris, and at that time showed considerable emaciation with œdema of face and extremities, and albuminuria. The œdema and albuminuria yielded to diuretics and restriction of diet. In June and July, at the time the menses were due, there was a slightly coloured discharge, but she continued to lose flesh. In September a foul smelling diarrhœa set in, with rapid pulse, albuminuria and increasing weakness, but no rise of temperature. On the eighth of October, the patient reported that a hard material resembling bone had been passed at stool. She was suffering severe pain. Examination revealed a mass protruding from the rectum, in which were found several bones of the foot and leg, separated from a body. No communication between vagina and rectum was determined. Under anæsthesia a badly decomposed fœtus, nearly nine inches long, was removed from the rectum. Improvement set in immediately, but four months later pain again developed, which was found to be occasioned by a piece of cranium in the rectum. This was removed and was followed by a very satisfactory recovery. In discussing Dr. Harris's case, Dr. L. M. Morton and Dr. T. A. Lebbetter expressed the opinion that it was one of ruptured tubal pregnancy.

Editorial

THE PRINCE OF WALES AND THE VALUE OF SCIENCE

AS President of the British Association of Science for the present year, the Prince of Wales delivered the opening address before a distinguished audience in the Sheldonian Theatre in Oxford, while another audience, equally large, gathered in the Town Hall and listened to him by wireless telephony through a loud speaker. It was not the first time that Royalty had delivered the Presidential Address at an annual meeting of the Association, for in Aberdeen in 1859, as the Prince reminded his hearers, his distinguished great grandfather, Prince Albert, held that position and delivered a thoughtful and far seeing address in which he pleaded for "the sacred cause of science." The Prince also recalled an incident which occurred at the first meeting of the Association in Oxford in 1832, when science by no means held the position which it does to-day, and Keble, the well-known hymnologist, objected to the conferring of degrees on four of the more notable members of the Association then visiting the academic city—David Brewster, philosopher and scientist, Robert Brown, botanist, John Dalton and Michael Faraday, scientists and chemists—and referred to the Association as a hodge podge of philosophers. And, again, at the next meeting in Oxford in 1860, Bishop Wilberforce made an unfortunate, ill-judged and ill-informed attack upon Darwin and his book on the *Origin of Species*, and was answered by Huxley and Hooker in a manner which has passed into history; Huxley remarking to a friend at the time, "The Lord hath delivered mine enemy into my hand." At that meeting another distinguished visitor, rankled by the opposition, is quoted as saying that Oxford had prolonged her existence as a university for a hundred years by the kind reception the fellows had received!

Since those days the Association has accomplished much. "Philosophers," the Prince said, "were not vain theorists but essentially men of thought; not conceited pedants wrapped up in their own mysterious importance, but humble enquirers after truth, God's truth—God's laws as manifested in His works and in His creations."

In continuing his address, the Prince of Wales put himself in the position of a traveller who had been up and down the world a good deal and had kept his eyes open. Everywhere, he said, he had seen as an onlooker the same thing; in factories, mining, agriculture, transport, housing, educational methods, and even in war, progress depended upon the application of science and on advancing knowledge. It is on the sincere pursuit of knowledge that man must depend to keep and improve his control over his surroundings, and so maintain his frail body in a naturally unfriendly environment at the top of the biological hierarchy. Under these circumstances, the relation of the State to scientific work becomes a matter of moment quite as much as any of its other organized activities. The Prince then traced in a most interesting way the development of the connection between the State and Science. Progress toward it was visible, if slow, down to the end of the last century. It quickened considerably during the early years of the present century after the establishment of the National Physical Laboratory. Then followed the Development Commission in 1908, stimulating research into the faulty conditions existing at that time in agriculture and in the North Sea fisheries. In 1913, the Medical Research Committee was constituted, and later, the Medical Research Council and the Committee for Scientific and Industrial Research, and other outward and visible signs developed, indicating the great change that had come over the leaders

of the people in Whitehall. The appointment of the Medical Research Committee under the Insurance Act, and its development into the Medical Research Council has led, thanks to judicious direction, to an increase in knowledge and to definite advances in medical treatment. Collective investigation, long ago fostered by the British Medical Association, has played a large part in furthering improved public health measures; the state, however, now realises that it, also, is actively concerned with the promotion and coordination of medical research into means for the conquest of the infirmities afflicting humanity. A few results of recent research may be mentioned. *Insulin*, a gift of science to humanity from young and enthusiastic investigators in the Dominion of Canada, is saving many lives previously doomed, and restoring to health many crippled by restrictions. The discovery of *vitamines*, those minute and mysterious constituents of our various foods, has brought understanding, and the power to remove conditions leading to disease. Sunlight and its artificial equivalent, is found to have not only value in the treatment of disease, but also to have still greater importance in preventive hygiene. Looking back on the early years of this century one may say that while science then was definitely a working part of the machinery of state it was not, as we realize now, a part, working at full power.

The creation of the Government Department of Scientific and Industrial Research was an act which falls historically within the period of the war. By an odd freak of history it needed the whole period of a century between one great war time and the next—between the Napoleonic and the great world wars—to mature the conception of a state department of scientific research. An element of distrust appears to have existed between science and state. A strong body of scientists were avowedly afraid of an organization of any kind dependent on the state. Scientific research, as Sir George Airy phrased it, at its inception lies with the genius of the individual. The results that accrue may be far beyond the thoughts of the investigators. Of this, the Oxford meeting in 1894 supplies an example. In the discussion on flight and æronautics which took place and was opened by Hiram Maxim, no less a leader in science than Lord Kelvin referred to Maxim's machine as a child's perambulator with an attached sunshade magnified many times. How greatly have our views changed!

A recent report of the Committee of the Privy Council for Scientific and Industrial Research shows that at present under the direction of the Committee, there are eleven research boards, several of which direct the work not only of their own but of other subsidiary committees. Few people realize the magnitude of the task undertaken by this Committee.

The Government's Fuel Research station has not yet found the hoped-for plan for the commercial production of more economical smokeless fuel, oils and gas, but it has shown the possibilities of unexpected economies, the value of which are well in excess of the cost of research.

The Building Research Board has made most extensive and valuable investigations into every circumstance affecting house building, and aims at creating a real science of building. The work of the Food Investigation Board is of the greatest importance. On its researches depend questions and decisions fraught with effects on the health and future physique of the nation. Not only does it deal with the actual composition of food, its adulteration and the effect of preservatives of various kinds, but also with the great and increasingly important question of cold storage, its drawbacks and its advantages. Notwithstanding all these government activities, the Prince assured his hearers that a vast field still remains for the enterprise of individuals, and for the stimulation and guidance of this Association of Scientists, and ended his address in a note of hope and cheerfulness and a firm belief in the future developments of science. Whether coming years are to be bright or gloomy this much is certain, that only by employing scientific methods to the fullest possible extent can this nation hope to maintain its standards of life.

XUM

IMPRESSIONS OF A FREE LANCE AT THE NOTTINGHAM MEETING

TO one whose experience of large association meetings on this side of the water, is not inconsiderable, it was extremely interesting to observe the manner in which the programme of a British Medical Association annual meeting is arranged. Though perhaps, lacking somewhat of that intensity in work or in play, which is characteristic of our friends to the South—an intensity which, in its extreme Tri-State form, demands a programme lasting from 7 a.m. to 11 p.m. over five consecutive days—the meeting in Nottingham displayed the English spirit of moderation which added not a little to the general pleasantness of a scientific gathering by the plan that no more than half the day shall be devoted to work, while the other half is devoted to friendly parties and discussions and to relaxation.

The meeting lasted officially three days; the scientific sessions occupying the forenoons, while the afternoons were given over to all sorts of gatherings, garden parties, and golf. An evening at the theatre held an equally official place in the programme with the annual banquet on the following evening. Finally the fourth day, for those who cared to remain, was filled with most attractive excursions to various points of interest at some distance from Nottingham. Many of the members brought their women folk, and many and varied entertainments had been arranged for their amusement. At the banquet the number of dinner speeches was kept within very reasonable limits, and the speeches themselves were unusually good. Sir Berkeley Moynihan, among others, justified the reputation which he enjoys, of being as fine a speaker as he is a surgeon. The Duke and Duchess of Portland graced the banquet with their presence, and the Duke's remarks, including as they did a most tactful and conciliatory expression of opinion upon the coal strike, were as graceful in form as valuable in substance. Altogether the Mother Country does these things extremely well.

The scientific sessions were interesting and well attended. On the surgical side, the papers presented at the three symposia with the discussion which followed each group of papers filled the greater portion of the time at the disposal of the meeting. One symposium was upon cerebral tumours, one upon anæsthesia in abdominal operations, and one upon carcinoma of the tongue. In the symposium on anæsthesia the guest was Professor Finsterer, of Vienna, who is a strong advocate of splanchnic anæsthesia. It will be of interest to Canadians to know that the President this year of the Section on Anæsthesia of the British Medical Association was Dr. Samuel Johnson, of Toronto, the doyen of Canadian anæsthetists; and that Dr. Wesley Bourne, of Montreal, contributed a valuable paper. In the medical section there was a highly scientific, but practically very useful discussion on the more recent advances in our knowledge of the physiology of the liver and the gall bladder, and their clinical application. Professor Evarts Graham, of St. Louis, was the guest of honour at this discussion, and gave a summary of his work upon cholecystography by the use of the dye test, commonly called the Tipp test. This test was introduced by him nearly two years ago and since then it has excited much interest throughout the scientific world, and makes an important advance in our methods of diagnosis of lesions in the gall bladder. Dr. McNee and Sir Humphry Rolleston discussed recent advanced work on the function of the liver, and it is well recognized with what authority both of these leaders are able to express their opinion. Several other papers were contributed, dealing chiefly with the Graham test and confirming its value.

The Presidential Address, delivered at a large public meeting on the first evening by Mr. R. G. Hogarth, senior sur-

geon to the Nottingham Infirmary, must be ranked as one of the best general addresses of this sort that has been given in a long series. It appears in the *British Medical Journal*, July 24, 1926, Vol. II, p. 145, and should be read by all medical men. While many of the topics discussed by Mr. Hogarth had a special bearing on conditions in the Old Country, there was much in his address which was applicable to the general practice of medicine in any country. It was both wise and witty, was couched in faultless English, tempered with practical commonsense and was full of a fine and sane idealism.

Altogether, one came away from Nottingham with a definite feeling of admiration. There are some meetings that leave one with a half repressed conviction of futility; this one did not. Something had been added to one's knowledge, and one was not tired.

Nottingham, the city in which the meeting was held, is situated in one of the very beautiful districts in England, with spots of great historical interest all around. The whole country is a garden, and at a short distance lies Sherwood Forest, reminiscent of Robin Hood. I saw the "Major Oak" with the big hole in the trunk, which served Robin Hood and his merry men as a larder. The story must be true, as Mark Twain might affirm, because "I saw the hole."

One final word. The Executive Council received the Canadian delegates most cordially, heard the invitation of which they were the official bearers, to wit, that the British Medical Association should hold one of its annual meetings within the next few years at Winnipeg, and decided within ten minutes to accept that invitation for 1930. EDWARD ARCHIBALD

THE CENTENARY OF LISTER

THE fifth of April, 1927, will be the centenary of the birth of Joseph Lister, who must be regarded as one of the great benefactors of our race. At least we have reason to hope that this view is held by the great majority of those who read the *Journal of the Canadian Medical Association*.

But, "Fame is no plant that grows on mortal soil." A few weeks ago an English periodical with a large circulation in England and America, chiefly among the educated and intelligent classes, asked its readers for the names of the seven greatest Victorians. When the lists came in the name of our hero was not among the seven.

The list was headed by the name of a distinguished politician, the "revered phenomenon" of many, who regard his principles and his achievements as something almost divine, but there are also many who curse him as an insidious underminer of the British Constitution.

The names of great poets and novelists are among the sacred seven, but it is significant of the ignorance of the readers of the *Spectator*, or of their aloofness from the most pressing cares and anxieties of mortal man, that the name of him who has brought so much happiness to the world, in the prolongation of life, the saving of limbs, the relief of pain, has been forgotten, or deliberately omitted from this list of great Victorians.

The Canadian Medical Association is to honour the memory of Lord Lister at its Annual Meeting, in 1927, in an Oration, to be delivered in Toronto by Sir Charles Sherrington, late President of the Royal Society. The British Medical Association, meeting next June in Edinburgh, will also make a centenary memorial of Lister one of its prominent features, and steps are now being taken to perpetuate in some suitable way the memory of his great and benign work. It is almost certain that the American Medical Association, and Medical Societies generally, probably, if more or less individually, will celebrate the centennial of Lister's birth.

One is tempted to hope that such an

impulse may be given to the strong, deep current of admiration, reverence and love which does flow strongly in the medical profession in all climes, by these scattered celebrations, that the whole medical world may hereafter adopt April the 5th as "Lister Day" to be observed each year in every hospital and medical school in all lands.

Is it too late now to plan for some such celebration next year on the real centenary day, April 5th? In all medical schools, a special Surgical lecture might be given: in the more celestial regions of the universities, far removed from the anxieties and commotions of the operating room, students in the domains of philosophy, literature, science and art, might be asked to consider the life and work of one who did so much for humanity.

JOHN STEWART

EDITOR: We should be glad to have the opinion of our readers on this matter.

WHAT'S WHAT?

IN the sphere of medical education, three questions are ever dominant. In a certain convivial relationship one is usually able to say "when" at approximately the correct moment. But as the medical dean labours over his budget, such definiteness is impracticable, and he can only murmur: "When's when?" If teaching personnel must be selected, the question is "Who's who?" As to the curriculum: "What's what?"

The questions are stated in this order because it fits in with the circumstance that the medical dean is expected to be unusually nimble in the exercise of faith, hope and charity. And as the greatest of these is charity, it follows that the dean is most concerned in what's what. Charity demands that the burden imposed on the student should be no heavier than is clearly necessary.

Haggling over the medical curriculum could scarcely have reached the high state of development with which we have become familiar except by a prolonged evolutionary process. It would serve little purpose to endeavour to trace this out. Sufficient unto this day is the evil thereof, and there is no need for carrying forward the evil of yesterday. And as medical educationists foregather to discuss their problems, it is with the melancholy certainty that they will squabble fiercely over the relative merits of different courses as they are constituted today.

One of the notable features of recent discussions is the growing disposition to insist upon more adequate teaching of preventive measures. This does not mean merely more instruction in the course which, for the sake of convenience, is dubbed hygiene. On the contrary the indications point to either much modification or considerable curtailment of that course, due to the tendency to require local medical officers of health to become specially qualified. It is, however, being generally advocated that prophylaxis, which concerns the old-fashioned hygienist in scarcely more than the communicable diseases, should be taught with much thoroughness in the didactic and clinical presentation of medicine, surgery and obstetrics, and in respect of all types of disease.

The motive is patently excellent, and meets with general approval. Medical teachers would, doubtless, be unanimous in support of the suggestion if more time were available for lecturing. Aye! There's the rub! And it's a rub which wears insistently upon him who queries: "What's what?" If the quality of mercy is not to be strained beyond endurance, the time required of the medical student must not be lengthened. What is to be "what" must be that which is most essential in the teaching. The less essential things must be subjected to curtailment or even elimination.

Among the faults of the usual system of teaching medicine, is the small opportunity which it affords the student of

studying disease in its complete setting. The student sees the patient in the hospital, where conditions bear little resemblance to those in the home. Yet the home conditions may be largely, perhaps wholly, responsible for the patient's illness, and may induce prompt return of the illness after the patient leaves the hospital listed as cured. Just a quarter of a century ago, consequent upon a remark by Osler to the effect that organization was lacking for the relief of about 70 per cent of dispensary patients, a beginning was made at one American school of what might be termed environmental medicine. Students of this school were at first advised, and a few years later were required, to visit the homes of poor patients to investigate the conditions there, which might have a bearing upon the illnesses of these patients. The evolutionary process goes on. Thus, at Dalhousie University, the clinical teaching in minor and many of the chronic ambulatory ailments is done in the outpatient clinics of the University Health Centre, and there the endeavour is being made to send the student to the homes of outpatients to study, if need be with the assistance of a nurse who has had training in social service, the home conditions of such patients. The object is to give the student opportunity to learn not only the factors in the home life which may have had a causal association with a patient's illness, but also the ways by which unwholesome conditions may be overcome. It is obviously of little avail to prescribe medicines for an illness which is the result of uncleanliness, lack of fresh air or sunshine, badly selected or badly prepared foods, domestic disharmony, and so on almost *ad infinitum*, unless such things can be remedied.

Now that we are getting a better insight into psycho-pathology we have come to realize that many chronic ailments, which baffle ordinary methods of treatment, are not merely the result of disordered imagination but are dependent upon nutritional faults or endocrinic imbalance, or both, and that the emotional instability which is so commonly associated is intensified through lack of understanding on the part of friends. The vicious circle must be broken if satisfactory results are to be achieved, and this cannot be done by the administration of drugs alone. The effort should be made to demonstrate to the student, when possible, any available means of breaking the vicious circle, even to the extent of straightening out domestic infelicities—a form of service in which some medical men have outshone competitors from all other ranks of social workers. But how are all these things to be done if established methods of teaching are to be continued unchanged? What's what?

W. H. HATTIE

ON THE TRACK OF A FALLACY: THE GUANIDINE THEORY

ONCE an error is well started its arrest is difficult. The guanidine theory affords an excellent example. Guanidine is a fairly simple chemical base, CN_3H_5, to which is usually ascribed the structure $H_2N.C:(NH).NH_2$, though recently a slightly more complex formula has been suggested. It was first obtained by Strecker in 1861 by the oxidation of guanine, a substance normally liberated in the body during the digestion of nucleoproteins, and oxidized to uric acid. Guanine is present in guano, whence the names of these compounds.

A number of guanidine derivatives play important parts in metabolism. We continually absorb from the intestine *guanidine*-amino-caproic acid—the amino-acid we call *arginine*—and striped muscle contains about half a per cent of *methyl-guanidine*-acetic acid—which we call *creatine*. Since guanidine and methyl-guanidine when injected intravenously into animals are highly toxic and lead to those nervous manifestations we call tetany, at first sight it seems not unreasonable to suppose that guanidine may be formed in the body, or set free

in the intestinal tract and absorbed into the body, and that unless it be rendered harmless by some chemical change tetany will result. Since we know very definitely that removal of the parathyroid glands leads to tetany, what is more natural than to suggest that the parathyroids have the normal function of detoxicating guanidine and its methyl derivative, and even of converting the latter into its useful derivative creatine.

But while the bulk of recent research tends to make us simplify our theories of chemical action within the human organism, mere simplicity of a theory is no warrant for or support to its accuracy.

The belief that certain tissues have detoxicating functions is a survival of the dark ages. We know that that vast mass of tissue, the liver, does render many toxic compounds harmless. Many other organs have had similar functions thrust upon them when their true functions were unknown and it took long to disprove of such untruths. Common sense suggests that the minute parathyroids, with their small blood supply, could exert but slow removal of toxic compounds from the blood passing through them, though the possibility that they might pour into the circulating blood a powerful detoxicant is not quite so remote.

Kutscher, and Achelis independently, in 1906, and Engeland, in 1908, stated that methyl guanidine is present in urine. In 1912 Smorodintzev claimed that tissues also contained it. W. F. Koch, in 1913, stated that methyl guanidine is present in the urine of parathyroidectomized dogs. Noël Paton formulated a theory, in 1916, akin to that outlined above; Koch elaborated it; many have accepted it. Since it has become evident that the parathyroids are really concerned with calcium metabolism the theory has been extended to involve this as well.

Noël Paton's pupils claimed that the urine of parathyroidectomized dogs contained greater amounts of the guanidine bases than the amounts which they state are present in the urine of normal dogs, and further that these bases are present in the urine of children with infantile tetany. That guanidine is present in tissues has now become a text-book statement. Vines has "standardized" the activity of various commercial parathyroid preparations by means of a supposed guanidine-parathyroid "test-tube" interaction. Major is at present attempting to show that arterial hypertension is due to deficient guanidine excretion. Thus, a somewhat large edifice has been erected on the guanidine theory. It is necessary to examine the strength of the foundations very carefully.

Obviously, the important foundations on which the whole structure is based are the chemical evidence for the actual presence of guanidine bases in urine and tissues, and evidence for the actual existence of a toxic substance in the blood of parathyroidectomized (and, therefore, non-detoxicating) animals. If these are shaken the edifice will fall. Two types of procedure have been employed to identify guanidine. In one the urine or tissues have been subjected to somewhat drastic initial precipitation treatment in presence of mercury or similar salt facilitating oxidation. Such treatment, as Baumann and Ingvaldsen pointed out as long ago as 1918, may convert creatine into guanidine (and creatine is frequently present in urine, and always in tissues). No conclusions as to presence or absence of guanidine can safely be drawn when such methods are employed.

Findlay and Sharpe, and Major have attempted to avoid this pitfall by using less drastic procedures; they claim to obtain dimethyl-guanidine from urine. Apparently they have rested content with the fact that the melting point of the picrate obtained was nearly identical with that of the compound expected (the nitrogen content showed no good agreement). It is not very uncommon to find two compounds with almost the same melting point, and the subject seems sufficiently important to warrant a demand that the picrate be more completely investigated. Until this is done we must conclude with Greenwald that the existence of guani-

dine bases in urine and tissues is not proved.

The main evidence for belief in presence of a toxic compound in the blood of animals in tetany after parathyroidectomy seems to lie in the observation that if such animals be bled, and then a corresponding amount of normal saline be injected, there is temporary relief, due, according to the protagonists of the guanidine theory, to dilution of the toxic compound. But Greenwald, testing the blood from such animals actually in tetany on normal animals, could find no evidence of toxicity, while recently Swingle has shown that the true cause of the actual relief that really does occur is a temporary rise of the blood calcium. Collip's work, definitely associating the secretion of the parathyroids with maintenance of the normal level of blood calcium, dealt a severe blow to the guanidine theory, and Collip and Clark have now shown that the chemical blood picture of dogs in tetany after parathyroid removal and after guanidine injection is sufficiently different to lead to the conclusion that the guanidine intoxication theory of parathyroid tetany is incorrect.

Most, if not all of the parathyroid extracts on the market, with the exception of those prepared by Collip's procedure, are inactive. Last year, White and Cameron showed that Collip's active extract is inactive when tested by Vines' guanidine procedure, according to which on the other hand, nucleic acid, present, in all fresh and dessicated tissues, is more active than dessicated parathyroid preparations.

Wherever the evidence for the guanidine series of theories has been tested it has been found to be either invalid or insufficient. The theory associating guanidine detoxication with parathyroid function we may discard. Major's theory that guanidine is associated with arterial hypertension requires much more rigid proof than has yet been offered. The days of the guanidine heresy seem almost over.

A. T. CAMERON

INHERITANCE IN CANCER: A NOTE ON THE WORK OF MAUD SLYE

THERE appeared recently an important article* dealing with the principles of inheritance in general, and the application of these to the heredity of cancer. The author, Professor Maud Slye, has devoted long years of patient and careful study to the great problem of malignant disease and, in her laboratories in Chicago, has conducted many thousands of experiments upon cancer in mice. She now demonstrates clearly the remarkable and extremely important fact that, in this animal at least, spontaneous cancer is inherited, and arises through the action of a recessive factor for abnormal tissue growth. In order, however, that such recessive characters may be expressed in an individual they must be present in double quantity, that is, they must be represented in *both* parents; for, if occurring in only single quantity they remain latent, although they may be transmitted to the offspring.

The mode of inheritance of cancer is graphically and convincingly brought out in a series of charts which serve to demonstrate the astonishing fact that an individual may inherit cancer from a father and mother who are quite free from the disease, and in whose family history there is no carcinomatous taint, but who both carry the factor for cancer latent. The factor for cancer may thus remain lurking in the germ plasm without being accompanied by any actual disease in the individual, and may never exhibit its potentiality in the production of the malady unless mated with another simi-

* Slye, Maud, Some misconceptions regarding the relation of heredity to cancer and other diseases: Studies in the incidence and inheritability of spontaneous cancer in mice, *Jour. Am. Med. Ass.*, 1926, lxxxvi, 1599-1606.

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lar factor in another individual. With no other artificial measures other than the choice of appropriate mates (those known to carry the recessive factor for abnormal tissue growth), she can change what has been for generations an apparently cancer-free strain of mice into a strain in which every mouse develops the disease.

Dr. Slye thus accounts for the sporadic cases of cancer in the human subject, where no hereditary tendencies are discernible, and her work seems to bring into harmony with the inheritance theory of cancer, a circumstance which up to the present has been very puzzling. This discussion is quite apart from the cases of cancer where there is a definite family history of the disease. Members of such families, of course, are more apt to develop carcinoma than are those from families in which it has never made itself manifest.

Obviously, experimental work of the type which Miss Slye has carried out demands remarkable skill and infinite patience. The author emphasizes the necessity for a very careful study of the animals used in genetic experimentation, by exhaustive breeding tests, to demonstrate whether or not they are completely lacking in any factor for abnormal tissue growth. By such means it is possible to select cancer-free strains, just as it is possible to select those which have a recessive cancer-producing factor. Applying the same principles to the human subject, it should be possible, if the conditions could be controlled, to develop only a cancer-free human stock, and to eliminate this dread scourge altogether from the human race. That is one of our eugenical problems.

Atention is called by Miss Slye also to the fact that the terms "congenital" and "hereditary" are often confused, as, for instance, in connection with congenital syphilis. Hereditary defects are inherent in the fertilized ovum, and have been present in the individual's progenitors, either latent or evident. A hereditary defect may be manifest at birth or may lie dormant for many years before it is apparent, as in the case of peroneal atrophy. Congenital defects, on the other hand, arise through extraneous influences, such as those of a chemical or bacterial nature, exerted upon the developing embryo, and are in no manner to be referred to defects in the germ cells. The tendency to designate as congenital what is really hereditary militates against a clear knowledge of the importance of heredity in the transmission of disease.

MADGE THURLOW MACKLIN

THE PSYCHOGENETIC ELEMENT IN EPILEPSY

OCCASIONALLY one has the opportunity of witnessing an hysterical attack in a patient afflicted with essential or idiopathic epilepsy, and again one may see a typical major epileptic seizure in a patient whose make-up and behaviour are distinctly hysterical.

We are on safe ground when we assume that in many cases, labelled epilepsy, a psychogenetic element is present. If, as is well known, an emotional disturbance such as anger or excitement may bring on a seizure, are we unreasonable in formulating an hypothesis of suppressed or repressed emotional conflicts constituting in some cases the origin of epileptic attacks, the latter being simply an expression of the former? Truly this will hardly apply to the epilepsy of infancy, but it might well apply to the epilepsy of childhood and adult life.

The line between epileptic and hysterical symptoms is sometimes indistinct. Attacks of dizziness, for example, may be diagnosed as *petit mal* or hysterical according to the bent of the examiner. Amnesia with regard to a convulsive outbreak might point in either direction.

Loss of consciousness is no longer considered indispensable to the diagnosis of petit mal, and bed-wetting and biting of

the tongue may occur in hysterical individuals.

Episodes of epileptic automatism resemble very strongly those of hysterical somnambulism, as described by Janet. Splitting of consciousness and subsequent amnesia is common to both.

So we come back to the question, are we shirking the real matter of diagnosis in convulsive cases by labelling them epilepsy, hysteria or psychoasthenia when we do not know exactly what meaning we attach to these words?

There is no questioning the fact that the boundary line between these and other allied conditions is indistinct here and there, and the conclusion is inevitable, that in all cases the psyche must be investigated and mental conflicts arising from repressed desires, painful memories, abnormal sex trends, inferiority complexes, or other disturbing and repressed emotional conditions, should be brought into consciousness. In this way we may be able by means of re-education to set up a new reaction of a non-convulsive type.

An occasional success in treatment along psychogenetic lines in cases which have been labelled epilepsy, affords strong encouragement to continue efforts in this direction.

A. G. MORPHY

ON MENSTRUATION AND PAIN

"MENSTRUATION is a function which, when normal, causes no symptoms; and but for the flow, the normal woman should not know that menstruation was taking place. . . ." Suffering of any kind associated with the period is abnormal, and is classed as dysmenorrhœa. Formerly, the term was confined to abdominal pain occurring at or during the menstrual period. Frequently, however, there are associated symptoms which indicate a reflected disturbance in other systems, such as severe headache, nausea or vomiting, and diarrhœa.

Cases of dysmenorrhœa may be divided into two classes, extrinsic, and intrinsic. In extrinsic dysmenorrhœa there is some definite pathological lesion present, which accounts for the pain, such as inflammatory conditions of the adnexæ, whether postpartum, tuberculous, or gonorrhœal in origin, or as neoplasms of the ovary. In a small number of cases displacement of the uterus may cause pain due to the mechanical obstruction.

Intrinsic or true dysmenorrhœa; may be due either to a deficient ovarian secretion, or to an insufficient uterine musculature. Many theories have been expounded to explain the underlying cause of this type of dysmenorrhœa, such as the mechanical theory, and the nervous theory, but none are adequate to explain all symptoms. It has, however, been shown that the uterine muscle itself, and not the endometrium is the chief seat of trouble. That this is true, can be demonstrated by the fact that many of these cases of true dysmenorrhœa are cured by child-bearing. A uterine muscle which has been subjected to the strong contractions and relaxations of labour, seldom gives trouble during menstruation. Curettage as a cure for dysmenorrhœa is becoming an operation of the past, since it only removes an innocent endometrium and opens up channels along which an infection may spread.

The frequency with which painful menstruation, of a severe type occurs, has apparently lessened during the past few years. Dr. Elizabeth Van Duyne in reviewing the statistics of Goucher College, Baltimore, has pointed out this fact. During the years 1900–1901, 30.3 per cent of the students there suffered from slight inconvenience, while 7.1 per cent had severe pain. From 1917–1923 only 3 per cent showed any serious handicap, while during 1923 and 1924 only 0.3 per cent of the students had severe dysmenorrhœa, and only 13.1 per cent

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felt pain at all. This advance toward the normal is accounted for by a more hygienic form of life, looser clothing, more exercise, daily baths even during menstruation, and lastly a change in the attitude of mothers who no longer bring girls up with the idea that menstruation is a pathological process during which they should remain quiet.

Dr. Clow, in a paper read before the British Medical Association in 1924, reviewed the cases of dysmenorrhœa occurring among 2,000 students; 10 per cent of whom were in a training school for teachers and the remaining 90 per cent in a secondary school. Of these, 22 per cent suffered with dysmenorrhœa; in 17 per cent the pain was only slight, but in 3 per cent it was disabling.

Both Dr. Clow's and Dr. Van Duyne's figures show a marked drop as compared with figures of 50 per cent quoted by many writers only one or two decades previously.

The treatment of dysmenorrhœa of the extrinsic variety, needless to say, is dependent on removal or correction of the pelvic conditions. The physiological cure for intrinsic dysmenorrhœa is, as was said before, pregnancy. Failing this, Hegar's method of slow dilatation of the cervix with graduated dilators followed by tight packing of the uterus with gauze soaked in an antiseptic solution such as acriflavine emulsion, is very effectual. The gauze is allowed to remain in the uterus seven or eight days and being a foreign body gives rise to expulsive contractions in the attempt to expel it. In other words, the effect is similar to a miscarriage.

The older method of rapid dilatation of the cervix, or of dilatation followed by the insertion of a tube in the cervix to keep it open for two to three weeks is based on the obstructive theory. Although it has been shown that since the rate of flow of blood through the cervix is approximately eight drops an hour, sufficient obstruction to cause pain could scarcely exist, yet some of these cases show relief; in a few this is permanent, but in the majority it is only temporary. This may be due to the fact that during the dilatation, the dilator acts as the plunger of a syringe forcing air up into the uterus and tubes dilating the uterus and straightening kinks in the tubes. In the same way, it has often been noted, that following a Rubin's test for patency of the tubes, cases in which the patient had formerly complained of dysmenorrhœa, were greatly relieved.

In dysmenorrhœa of a less severe type, a change to a more hygienic mode of living, as suggested by Dr. Van Duyne may be all that is necessary. Careful regulation of the bowels, especially just before the onset of the flow, will do much to cure many cases.

The atropine method of treatment, in the spasmodic type of dysmenorrhœa, has many advocates. It may be given in doses of 1/100 of a grain three times a day, starting two days before the onset of the flow and continuing until the third day of the flow. Symptoms of toxic action must be watched for, since patients differ in their degree of tolerance. Others advocate the administration of ovarian or other glandular extracts. For the mere relief of the pain many drugs, such as viburnum, hydrastis, canabis indica, and a few of the coal tar products may be of considerable value.

E. PERCIVAL

A DEFINITION OF BLINDNESS

DURING the past few months a discussion has been carried on in the medical journals of England as to whether a definite numerical standard of visual acuity is desirable. The matter is one of importance to the British public in view of the considerable amount of public money at present being expended under the Blind Persons Act of 1920, in subsidizing the training of the blind, and

supplementing their earnings, and in granting old age pensions ten years earlier to such than to the rest of the population. By this Act of 1920, blindness was defined as the condition "too blind to perform work for which eyesight is essential"; no numerical standard of visual acuity was mentioned. The Ministry of Health has during the past few months deemed it necessary to supplement the foregoing definition by the use of a definite measurable standard. The recent Act states that experience shows that persons whose acuity of vision, after any refractive error has been corrected, is below 3/60 are usually unable to perform any work requiring eyesight. Persons with vision better than 6/60 are usually able to perform some work; persons with intermediate degrees of vision may or may not be able, and much will depend upon the intelligence, and bodily energy of the patient and on the nature of the blindness. Those whose blindness is dependent on defects in the centre of the visual field may fail to reach a given standard, and yet be able to perform some kinds of work, while those suffering from a contraction of the field of vision may surpass the numerical standard, and yet be unable to walk alone or do any kind of work requiring eyesight. The *Lancet* supports the Ministry of Health in this action, and considers that the measurable standard will be of definite help to those who have to decide on the necessity for Governmental assistance. The *British Medical Journal*, on the contrary, questions the wisdom of the Ministry in ordering such a definite standard. It states that measuring human capabilities is one of the most difficult forms of judgment; judgment on the amount of vision available can only be gained by careful study and investigation. A man may have a degree of vision that is of considerable comfort and utility to him, and yet be economically blind; that is, unable to make a living by his eyesight. When the ophthalmic surgeon is called upon to pass a final judgment upon a case, it will be better that he, in justice to his patient, follow the first definition of blindness and render a decision requiring the exercise of all his trained faculties, and not simply put the case to the technical test as to whether the vision is 3/60 or 6/60. In the opinion of the *Journal* there can be no exact numerical standard of vision; decision must have reference to the work to be done, which is variable both in time and place.

No fixed standard exists when dealing with persons of ordinary sight. The standard for the army is lower than that in the navy. The standards for other workers must vary with the nature of the work to be done. The *Journal*, therefore, asks why a fixed standard should be assumed in dealing with those at the defective end of the scale; those alleged to be economically blind.

It may not be amiss to draw attention here to the needs of the blind and the partially blind in our own country and to ask what action the Government is taking. Is the Government taking efficient oversight of the indigent blind? and securing special training for those only partially blind? There are many children also in our midst who, under the strain of a progressive myopia are gradually losing clear vision and will be left behind in the struggle of life. Professor Byers in the May number of our *Journal*, has already drawn attention to the needs of this class, and makes a strong plea for the establishment of special classes for short sighted students, such as have been in use so successfully in many other countries. Our educational authorities apparently have not yet realized the needs of these myopic children. S. O. McMURTRY

ON THE RELATION OF DOSE AND EFFECT IN THERAPEUTICS

PROFESSOR A. T. CAMERON and W. G. MacKersie,* of Winnipeg, present an article in the *Journal of Pharmacology and Experimental Therapeutics* in which they detail the results of their investigations on the relation of the dos

* The relation of stimulus (dose) to effect, *Journal of Pharmacology and Experimental Therapeutics*, 1926, vol. xxviii, No. 1, p. 11.

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of a medicine to the effect it produces. The results obtained by them would indicate that while sufficiently large doses caused toxic effects and death except this action is prevented by the rapid elimination of the drug, nevertheless, in a more limited range, dosage bears mathematically demonstrable relation to the effect produced. In the past, various views have been held in regard to dosage, and amounts of powerful drugs have been frequently given which at the present day would be regarded as definitely dangerous. For instance, calomel has been given in teaspoonful doses to children suffering from diphtheria. Common sense in this regard has grown hand in hand with the increase in our knowledge of the exact action of drugs, and the huge doses of the past as well as the infinitesimal doses of homœopathy have, for the most part, disappeared from practice. The investigations carried out by these biochemists should be a fresh stimulus to careful dosage; the amount of a drug given should always be carefully adjusted to the effect desired. Still further, the results obtained by these investigators make a fresh demand for the standardization of all our more powerful drugs. Only from standardized drugs can exact results be obtained.

TUBERCULIN IN CRYSTALLINE FORM

WITH the conviction that the active principle of tuberculin is protein in nature, an attempt has been made by Dr. Florence Seibert to find out, if the specifically active protein could be isolated in very pure form, and possibly be among the few known proteins which can be crystallized. Quantities of tuberculin were obtained from commercial houses, and the protein as far as possible precipitated by saturation with ammonium sulphate; from this precipitate bundles of crystalline needles appeared on three different occasions. These washed needles give a marked skin reaction in tuberculous guinea pigs, and satisfy the requirements of true tuberculin activity. Dr. F. Seibert states that in her opinion there exists in tuberculin a protein which can be crystallized and that this crystallized protein is able to produce a tuberculin skin reaction. The quantitative potency of this protein will be reported in greater detail in the near future.—*Science*, June 18, 1926.

Editorial Comments

In the present issue of the *Journal* there appears, by authority of the Council of the Association, a report of the investigation of the Committee on Ethics into the charges preferred by Sir Henry Gray against Dr. Charles F. Martin, both being members of the Association.

This matter has engaged the serious attention of the Executive of the Council for many months and members are referred for the verdict and action of Council to page xxxiv of the Supplement in this issue.

In view of the publicity given to this matter both in the professional and lay press the Executive of the Editorial Board deems it its duty to draw the attention of our readers to these findings.

MEETING OF THE INTERSTATE POST-GRADUATE ASSEMBLY OF NORTH AMERICA, CLEVELAND, OHIO

We have received a preliminary programme of the Interstate Post-Graduate Assembly of North America, which is to be held at Cleveland, Ohio, from October 15th to 22nd inclusive.

The meetings are slated to commence at 7 a.m. on the first day, and will continue with short intermissions until about 11 p.m. every day of that week until Friday evening, when the banquet will be held and addresses given by distinguished citizens of the world. Symposia will take place on gynæcological subjects, obstetric subjects, pædiatric subjects, on cancer, and in the departments of surgical specialism. Diagnostic clinics also will be held and addresses given both in medicine and in surgery, and on diseases of the nervous system. Among those who are taking part we notice the names of George W. Crile, Dr. Friedrich Mueller of Munich, Dr. Campbell Howard of McGill University, Dr. Marlowe of Toronto, Dr. Polak of New York, Dr. H. H. Young, Johns Hopkins School of Medicine, Baltimore, Dr. F. C. Wood of New York, Dr. Alexis Carrel of the Rockefeller Institute, Dr. Christian of Howard Medical School, Dr. Goldsmith of Toronto, and Dr. Harvey Cushing of Boston. Mr. David Wilkie, professor of surgery in Edinburgh, Sir Thomas Horder of London, Sir William deCourcey Wheeler of Dublin, Ireland, and several other noted foreigners have promised to be present as guests and give addresses. The meeting, we are sure, will prove interesting and instructive.

NEW VIEWS ON PLANT LIFE

The idea that plants are as alive and sensitive as animals was presented by Sir Jagadis Chunder Bose, Indian botanist. He performed experiments which he claimed showed that plants react to cobra venom, cyanide and other poisons and to stimulants such as ether, chloroform and alkaloids, just like animals. The sensitive plant, he declared, is ten times as sensitive as the human tongue. Sir Jagadis says that the plant-heart that propels its sap is a layer inside the stem, similar to the elongated tubular heart-organ in lower animals, operating by pulsation. He showed an optical sphygmograph recording the "pulse" of a plant magnified ten million times by a reflected light beam. Plants, he claimed, have muscles much like those of human beings and that when tickled these are ordered to contract through the "nerves" of the plant. These are co-ordinated by a special bran-like tissue at the junction of stem and leaf stalk. (*Science Supplement*, Aug. 27, 1926).

THE NOVA SCOTIA TEMPERANCE ACT AND THE PROFESSION

In his Presidential address Dr. Hogan* stated that widespread dissatisfaction on the working of the Nova Scotia Temperance Act exists among the profession. The profession in Nova Scotia, through no fault of its own, has been placed in a most embarrassing position; a position lowering to its dignity. Morphine, cocaine or hydrocyanic acid, when required by patients may be prescribed by any member of the profession; but it is illegal to prescribe an ounce of brandy, or a bottle of stout, without carrying round a special pad of prescriptions, serially numbered and issued by the successors to the Liquor Commission. Although such prescription may call for only a small amount, the liquor depot will not dispense any amount less than twelve ounces, and their shop is shut at 5 o'clock in the afternoon. This is a serious question confronting an honourable profession, and the President hoped that the meeting would seriously and earnestly consider the best means to preserve the dignity and self-respect of our profession.

After discussion the following proposition was moved and seconded and carried almost unanimously, "That the medical profession in the Province of Nova Scotia have been made a part of the machinery of the Temperance Act and has been forced to bear practically the entire brunt of the enforcement of that Act. Be it therefore resolved that the medical society of Nova Scotia in annual session express its protest against this unfortunate state of affairs, and strong disapproval of its continuance, and that a copy of this resolution be forwarded to the government by the Secretary of this society.

* *The Nova Scotia Bulletin*, August, 1926.

CARE OF THE FEEBLE MINDED IN ENGLAND

We desire to acknowledge the receipt of the bulletin of the Canadian National Committee for Mental Hygiene for August, 1926, and note

the number of interesting papers on the treatment of mental defectives not only in England but on the continent. We were glad to read the following statement. "England has made greater strides in dealing effectively with the problem of mental deficiency than almost any other country. In 1913 there was an act of legislation that made provision for feeble minded individuals who were dependent, delinquent, or otherwise a burden to the state. The costs of institutional care, guardianship, and community supervision are placed in equitable fashion upon the central government and local authorities. Legislation relating to the feeble minded is obligatory, rather than permissive and excellent results have accrued. Of the known cases of feeble mindedness England has given specialized attention to more than half. A vast number of defective children are also receiving specialized instruction in the auxiliary schools. In London alone there are 200 schools arranged for such special instruction.

CONGRESS OF PHYSICIANS SPEAKING THE FRENCH LANGUAGE IN NORTH AMERICA

We have received a preliminary programme of the Congress of Physicians speaking the French language in North America, which will be held in Montreal, September 21st to 24th. The meetings will be held in the Windsor Hotel with the exception of clinics to be held every morning at the several hospitals, meetings which will be of the nature of clinical presentations. Many eminent leaders of the profession in France are to be present, among whom we notice the name of Professor Marcel Labbé, Professor Leon Bernard, and Professor Aug. Pettit; also Mons. Antonin Clerc, R. Gregoire, Edouard Rist, Marcel Pinard, Pierre Ameuille, Andre Moulonguet, Rene Charpentier, General Sabattier, J. B. Logre and Francis Bordet. Among the various subjects to be discussed will be the "Prevention of tuberculosis," and the "Prophylaxis of infantile syphilis."

A symposium is arranged for a discussion on the various causes of vertigo. The various relations between the hospital and the practising physician will be discussed in a series of papers. The fee for membership in the congress is placed at six dollars. All communications with reference to the congress should be addressed to the Secretary, Dr. Romeo Boucher, P. O. Box 183, Outremont, Montreal.

VEGETABLE AS OPPOSED TO ANIMAL FATS

We have received a lengthy paper from *Medical Life* emphasizing the view that vegetable fats should have preference to animal fats on the basis of digestibility, palatability, and caloric value in the diet, as well as on that of economy. These opinions are subscribed to by a number of the leading health authorities in the country, and according to *Medical Life* the movement for a greater use of vegetable oils and fats is well worthy of the thoughtful consideration of physicians and all social economists. In the past too much credence has been accorded to the supposed superiority of animal fats as a food. Vegetable fats have a lower melting point and are rather more serviceable for cooking, while foods cooked in vegetable fats are considered to be more easily digested than those cooked in animal fats. Especial mention is made of the value of vegetable fats in the dietary of children. Quite a number of pædiatricians make the statement that vegetable fats are more digestible and appear to suit children better than animal fats.

ON THE OPENING OF A POST-GRADUATE HOSTEL IN LONDON

Dr. W. McAdam Eccles writes as follows: "There can be no doubt that a foregathering of medical post-graduates in London from a social point of view is just the link which has been wanting in most of the post-graduate efforts in the past. This defect has now been remedied, and the opening of the Post-Graduate Hostel at the Imperial Hotel, Russell Square, London, is most opportune, for many post-graduates will be sojourning in the metropolis during the summer and autumn months.

"The first informal talk and discussion on operations on the stomach was certainly a success, and I feel sure that the opportunity afforded, in the excellent room placed at the disposal of

post-graduates by the management of the Imperial Hotel, of discussing topics taken in the post-graduate courses held in London by the post-graduates making this hotel their headquarters, cannot but bear most valuable fruit.

The Secretary of the Fellowship of Medicine in London writes us that a special post-graduate course of two weeks duration will be given at the Royal National Orthopædic Hospital between September 20th and October 2nd. Lecture demonstrations will be given each day by the staff on the various forms of deformity of the extremities, on spinal curvature, chronic arthritis, and the disabilities following an attack of poliomyelitis. The course is open to all graduates of medicine but the names of those wishing to attend should be sent previously to the secretary. The fee for the course is two guineas.

We are glad to note that the Department of Health has called the attention of its inspectors and analysts to the necessity for the careful inspection and examination during this season of the year, of ice creams, bottled beverages, and meaty preparations. There is a definite standard for the amount of fat considered proper to be present in ice cream, and this standard should be maintained. Preservatives should not be employed in food preparations, and the presence of food colours is definitely objectionable. We are very pleased to note that the government is taking action in the matter.

It is with regret that we learn by a letter received from the medical secretary of the British Medical Association of the state of the medical service in the West Indies. The medical officers at present stationed there appear to be very dissatisfied owing to the total inadequacy of their pay, the imposition of a table of fees officially prescribed for private work, the imposition of additional duties without additional compensation, and of the absence of any recognized system of promotion or any opportunity for leave of absence or study. A special officer from England, we understand, visited the islands and made specific recommendations for improvement of the service to some extent. The Governor, we understand, refused to agree to this report and appointed a committee to draw up a report which quite countermanded all the proposals of the visitor. Dr. Cox writes that the Governor has put into effect an ordinance which enables the local administration to employ physicians not qualified in the United Kingdom. We regret that such a condition of affairs should exist in any of our sister colonies, and we will be very glad to publish any communication from the islands in regard to the matter.

The fifty-fifth annual meeting of the American Public Health Association will be held in Buffalo, N.Y., October 11-14, with the Hotel Statler as headquarters. The programme excellently reflects the present-day problems in the public health field. Milk pasteurization and control, ventilation, measles, rural hygiene and pollution of boundary waters are some of the subjects that will receive particular attention in special sessions or in the sessions of the nine sections of the Association (Public Health Administration, Laboratory, Vital Statistics, Public Health Engineering, Industrial Hygiene, Food and Drugs, Child Hygiene, Health Education and Publicity and Public Health Nursing). There will be special sessions on mental hygiene, teaching of health in colleges, and two full half-days will be devoted to the subject of providing a safe milk supply. The programme this year will be an unusually large one, thirty-five sessions having been scheduled. The meeting will close with a special dinner session.

A hundred and forty speakers are listed on the programme, among whom may be noted: C.-E. A. Winslow, Jesse F. Williams, M.D., Irving Fisher, H. C. Sherman, Ph.D., Hollis Godfrey, Ph.D., W. H. Park, M.D., Livingston Farrand, M.D., Sally Lucas Jean, L. I. Harris, M.D., Herman N. Bundesen, M.D., W. S. Rankin, M.D., Haven Emerson, M.D., Frederick L. Hoffman, LL.D., L. I. Dublin, Ph.D., A. J. McLaughlin, M.D., John A. Amyot, M.D.

We desire to acknowledge the receipt of a copy of the Special Medical Supplement of the *Central European Observer*, with its delightful

description of Prague and a brief account of its history, its universities, and its various medical clinics, prepared by Dr. Chas. G. Reinhorn, a Canadian and a graduate of McGill University, and now operator in the first surgical clinic of the Charles University of Prague. Those who are purposing a visit to the hospitals of Central Europe we would strongly advise to obtain this monthly journal, which gives particularly interesting facts regarding medical teaching in the various centres of Europe.

It is always interesting to have authoritative reports on the developments in Russia, and the recently received bulletin published by the American Relief Administration (Series 2, No. 45, April, 1926) is a good example of this type of information. In the spring of 1921, there was a complete failure of crops in the Volga Basin and Southern Ukraine, with a threat of famine to 24,000,000. The American Relief Administration took up the work of relief, with funds placed at their disposal both by the American Red Cross and American Government.

The mere relief of starvation was, of course, by no means the only work to be done. The allied medical problems were equally pressing in their importance, such as inoculation of all exposed against cholera, typhoid, and smallpox, and the establishment of modern sanitation and efficient hospitals, which were all found equally needful. The work was begun in September, 1921, and concluded in July, 1923. The story of what was done in that time as recorded in this bulletin, is full of the interest that always attaches to such large scale efforts at helping a nation. This will be additional material for that medical historian who wishes to compare the various phenomena met with in such a famine as this, and those that India, for example, has known and dealt with for so long.

H. E. MacDermot

Correspondence

Our London Letter

(From our correspondent)

The chief event of the last ten days has, of course, been the meeting of the British Association at Oxford under the presidency of H.R.H. The Prince of Wales.

The Prince's address was delivered before a distinguished audience in the Sheldonian Theatre while another audience in the Town Hall listened to it by wireless telephony through a loud speaker. The Prince dwelt on the way in which science is linked up with every phase of national life, and emphasized our great indebtedness to the labours of men of science.

In all the sections of botany, zoology, physiology, psychology, anthropology and education interesting presidential addresses were given.

The President of the section of botany, Emeritus-Professor F. O. Bower, F.R.S. contrasted the views in regard to the Darwinian hypothesis as applied to vegetable life in 1860, in 1894 and in 1926. Dr. Bower said that the evolutionary view of the origin of species, as enunciated by Darwin, held its place "as a great philosophical pronouncement". It was, he said, probably true for plants that in the course of time small variations impressed by the environment did pass over into veritable changes. Botanical physiology rather than morphology is being studied at the present time.

In the section of physiology, the President, Professor Leathes, F.R.S., gave a very thoughtful address on the thesis that function determines "design", or the form of the structure. He recognized a potentiality of "spontaneous regeneration" as inhering in animal matter; but referred this not to any supernatural vital "force" but to the chemical complexities of the living protoplasm. Professor Leathes laid stress on the inconceivably large numbers of ways in which for instance only fifty amino-acids could be combined within the protein molecules. He suggested that biochemistry might possibly come to the aid of Mendelism in discovering the physical basis of heredity.

In the section of zoology, Professor H. F. Osborn, President of the great American Museum of Natural History, made the newer views of the origin of species his special theme. He said that since Darwin's day a considerable amount of light had been thrown on the problem of the origin of species. We cannot now say that new species originate by inheritance of acquired characters, or by the survival of fortuitous variations which happened to be adaptive. New species and sub-species origin-

ate, we believe, by modes which are continuous, determinate and adaptive. Species-in-the-making or "speciation" has been observed in fishes, amphibians, reptiles, birds and mammals. Geographical isolation with enforced physical or chemical change, enforced change of habit, enforced competition with new environment, and with new stimulus to the germinal energies themselves, constitute the chief known causes. Palæontology showed speciation to have been going on for a thousand million years. In Darwin's day (1827) 1,124 species of mammals were known; to-day we recognize 13,450 species.

In the section of anthropology, Miss D. A. E. Garrod showed a human skull which had been blasted out of the travertine rock at Gibraltar. Sir Arthur Keith, next year's President, said that it was that of a boy of eight to ten years of age, and belonged to a Neanderthal man of the Monsterian period. It was estimated to be 300,000 years old.

The section of zoology joined with that of physiology in a joint discussion on tissue-culture. An unexpected generalization has been reached as regards the technique of this subject, namely that isolated tissues will grow only in a fluid derived from a stage in the life history later than that from which the tissue to be grown is removed.

In July a congress of societies and institutions connected with chemical industries was held in London. During the sittings Sir Alfred Mond, M.P., gave an address on the place of the hormones and vitamins in present day physiology. He pointed out how much English speaking physiologists had contributed to these subjects, for Starling discovered secretin, the band of workers at Toronto discovered insulin, H. H. Dale had done recent work on adrenalin and pituitrin, and quite recently Harington had isolated and determined the chemical composition of thyroxin.

Sir Alfred said that the man of commerce was in an increasing degree co-operating with the biochemist to produce cheaper and purer substances of medicinal importance. He said he had known many scientists who had been responsible for industrial inventions, but never a financial genius who had invented a single scientific process.

D. FRASER HARRIS

London, August, 1926

Our Edinburgh Letter

(From our correspondent)

The regulations governing the Diploma in Psychiatry in Edinburgh have recently been readjusted. This diploma was originally instituted in 1911, but the various courses of instruction were continued over such a long period that few candidates presented themselves for examination. Under the new scheme the course is divided into two parts covering a space of three months each. There are two examinations. The first comprises the anatomy and physiology of the nervous system, along with psychology and experimental psychology. The second part includes neuropathology, clinical psychiatry and clinical neurology. In addition the candidate must profess one of a list of special subjects. Any further information may be obtained from the Dean of the Faculty of Medicine, University of Edinburgh.

The Annual Harveian Festival was held in the Physicians Hall on the 2nd of July. In the oration the President, Sir Robert Philip, traced the influence that William Harvey had had upon the Edinburgh Medical School through Sir Charles Scarborough. By the latter's personal interest with James, Duke of York the erection of the Royal College of Physicians in 1681 was brought about. This was ultimately to play an important part in the foundation of the Faculty of Medicine. Sir Robert also referred to the creation of the Harveian Society by Dr. Andrew Duncan, Sr., and read some interesting extracts from the early minutes. The oration which was obviously the outcome of considerable patient research was highly appreciated by an enthusiastic gathering of Harveians. At the dinner which followed, the "Immortal Memory" of William Harvey was proposed by the President. It was a thoughtful tribute to the great master proposed in eloquent and generous terms. The reading of the minutes by Mr. Dowden, was a characteristic and diverting feature of the occasion.

It seems probable that the Edinburgh Royal Infirmary will be able further to extend its already large dimensions by spreading towards the west. Negotiations have for some time been proceeding between the Infirmary managers and the Edinburgh Merchant Company, for the acquisition of the land at present occupied by the George Watson's Boys School, which is to be moved to a more suitable locality. By the generosity of Sir John Findlay, Bart., the proprietor of the *Scotsman* newspaper, who is contributing £10,000, the Infirmary has been able to offer £90,000, for the site. It is believed that this is acceptable to the Merchant Company.

From a medical aspect, the recent appointment of Dr. James R. C. Greenlees to be headmaster of Loretto School is an interesting innovation. This famous Scottish school is situated at Musselburgh, seven miles from Edinburgh. Dr. Greenlees is a graduate of Cambridge Medical School and was for seven years on the staff of the Western Infirmary, Glasgow. He was also attached to the Sick Children's Hospital. He joined the R.A.M.C.,

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in August 1914, serving until the close of the war, and was awarded the D.S.O., and the Cross of the Legion of Honour. In addition he was an international rugby football player. The result of this new venture will be watched with great interest, and it may be safely predicted, that, with such an excellent representative to blaze the medical trail, he will not be the last doctor of medicine, to be appointed to the charge of a great educational establishment.

The British Medical Association will meet in Edinburgh in July, 1927. The date coincides with the centenary of Lister's birth. It is a fortuitous circumstance that the meeting is to be held in the city where so much of his pioneer work in preventive medicine was performed. The association has met three times previously in the capital of Scotland. In 1858 under the presidency of Professor Alison; in 1875 under Sir Robert Christison, Bt.; in 1898 under Sir Thomas Grainger Stewart. The President in 1927 is to be Sir Robert Philip. A general committee has been formed and this has already met and various local committees have been arranged. Edinburgh has always been a popular meeting place of the Association. It is hoped, that the success of previous gatherings will be repeated next summer, and that among the guests welcomed in "High Dunedin" will be many friends from overseas.

A further step forward has been taken in the treatment of mental ailments by the establishment at the Edinburgh Royal Infirmary of an Outpatient Clinic for acute cases. The clinic is presided over by Dr. George Robertson, the Professor of Psychiatry, assisted by medical officers from the Royal Edinburgh Asylum. By this means cases of mental disease may be recognized in their early stages and the appropriate treatment suggested. Patients can be advised to enter mental hospitals, as voluntary patients without incurring the distress and suffering, often caused by medical certificates and sheriff's orders. The clinic is doing very good work, and an increasing number of patients vouches for its popularity with the general public.

The annual dinner of the Edinburgh Royal Infirmary Residents Club was held on June 25th. Dr. Charles Douglas of Cupar, Fife, was in the chair. Over a hundred former house physicians and surgeons were present. In a notable address Dr. Douglas entertained the company with reminiscences of former days, when he was a student and house surgeon, and Lister, Joseph Bell, Syme and Spence held sway in the wards of the old hospital in Infirmary Street.

One occasionally wonders whether there is any truth in the suggestion that some portions of Scotland are peopled by the remnants of the lost ten tribes of Israel. A doctor returning from the Hebrides relates the following story. Hearing that Donald —— had been removed to the lunatic asylum, he hastened to condole with the patient's brother. "Yess," said the brother, "it was a sad, sad case. You will be remembering that poor Donald wass in the Army during the war, and that when he was discharged he was a little bit wrong in his mind. He would be coming into the house and threatening to take a torch and set fire to the thatch. But all the time he was getting a pension from the government, so we did our best to humour him. Oh! he would be very peculiar. He would threaten to cut my wife's throat from ear to ear. And another time he would say he would be for drowning the children in the loch. But always we were hoping that he would recover. And then one day a terrible thing happened. The poor fellow brought us a letter that he had written to the Pension's Ministry, saying that it was against his conscience any longer to receive a pension from the Government; so we realized that he was hopelessly insane and sent him to the asylum."

The next is a true bill. It was culled from a tombstone, in the Tangwick Churchyard in Esha Ness, in the north of Shetland, a few weeks ago.

"Donald Robertson. Born 14 January 1785, died 4 June 1848, aged 63 years, he was a peasable quiet man and to all appearance a sincere Christian, his death was very much regretted, which was caused by the stupidity of Laurence Tulloch in Clothista who sold him Nitre instead of Epsom Salts, by which he was killed in the space of 5 hours after taking a dose of it."

By their deeds ye shall know them.

GEORGE GIBSON

THE TRAINING OF NURSES

To the Editor:

The Canadian Medical Association at its annual meeting in Victoria, June, 1926, created a committee, with myself as Chairman, "to study and report upon the curricula of training schools for nurses in Canadian hospitals; to determine the process by which the present curricula have been evolved and the supreme authority in determining these matters; to request co-operation in this study from other Canadian organizations directly concerned in the education of nurses, pupil or graduate."

It is senseless to ignore the frequent criticisms directed against the present system and its results. These criticisms emanate, not only from members of the medical profession and from the laity but also from members of the

nursing profession itself. "Where there is smoke there must be fire." It is my great desire that the deliberations of this committee shall avoid disputatious controversy or sweeping statements unsupported by facts, and in the end shall present a constructive policy which shall be to the benefit of all concerned.

"People who live in glass houses must not throw stones." The undergraduate medical curriculum of the present day is far from being beyond criticism. Therefore it behooves us of the medical profession to be chary indeed in criticising the methods of teaching in the sister profession.

The two professions are indissolubly linked in the work of relieving the ills of humanity. If either fail to any degree the public suffers. This last is the justification for the existence of this committee.

It is planned that we shall be assisted in our deliberations by members of the nursing profession engaged in teaching and those in practice; by hospital superintendents and administrators; by members of the medical profession in hospitals where training schools exist, in hospitals where a training school does not exist, and by members at large.

The work of the committee must be much more comprehensive than is indicated in the charge from the Council of the Association.

To intelligently determine what should be the course of study of the pupil nurse in training one must determine

1st. Who are suitable, *i.e.*, entrance requirements.

2nd. How they shall be trained—undergraduate curriculum.

3rd. Specialty and post-graduate training.

4th. The ultimate result: (a) To the nurse.
(b) To the public.
(c) To the medical profession.

It is our intention to form sub-committees throughout the length and breadth of Canada, and to correlate their work through the central committee.

It will be of the greatest assistance if readers of the *Journal* will communicate their ideas and experiences relative to this topic to the undersigned.

ALFRED T. BAZIN,
Chairman

Medical Arts Building, Montreal.

IS THE DISCUSSION OF THE PAPERS READ AT A MEETING DESIRABLE?

To the Editor:

I attended and greatly enjoyed the annual meeting in Victoria except for one particular detail in the arrangement of the programme, *i.e.*, the entire absence of discussion.

In my opinion this is an important matter, and I would like to see it aired in the correspondence columns of the *Journal*. I am certain the committees who in the future may have charge of the arduous task of programme building will welcome criticism of a constructive nature.

From the personal point of view I was disappointed as I had definite ideas to express on some of the statements made, some of which were in accord, and some at variance. But more important than any personal reason is the fact that papers read before open meeting to some extent obtain the stamp of approval of the Association. Only by discussion can important truths be emphasized, questionable statements be challenged, and a proper perspective be maintained.

It may be argued that to permit free discussion will interfere with the time schedule of the programme and force out the later speakers. Surely this is under the control of the Chairman.

Too often one notes a laxity of this control. With a desire not to offend a speaker, the whole audience is offended in listening to long drawn remarks, which are frequently a repetition of the statements of previous speakers or too often are irrelevant and out of order.

I would like to suggest:

1st.—That papers should be presented in abstract. A time limit of fifteen minutes should suffice; if more is required, it is safe to predict that the subject is treated in a too comprehensive and didactic manner, and will lack "punch."

2nd.—Discussion should be led by one or two chosen speakers limited to five minutes each. Any others desiring to speak should be limited to three minutes each, and should be compelled to speak to that phase of the topic particularly under review—in other words should not be permitted to play up and down the gamut.

3rd.—The discussion should be closed promptly if a speaker is not on his feet by the time the last preceding speaker is finished.

4th.—The contributor of the paper in his reply should be limited to five minutes.

5th.—Respectfully and timorously I would also like to suggest that the Association should own, and at each annual meeting instal, a large dial fly-back clock, placed at the rear of the hall in full view of the speakers, and under electric control by the Chairman or his deputy.

I have stated my own views rather fully and emphatically in the hope that it may evoke the opinions of others.

Yours etc.,
"DEBATER"

Miscellaneous

THE ART OF WRITING MEDICAL PAPERS*

A stern critic has said that the most serious vices of modern English prose are indifference to the origin and proper meaning of words; neglect of order and rhythm; a tendency to prefer the abstract to the concrete; the use of nouns instead of verbs; and an indolent acquiescence in worn-out phrases. But these abuses of language, he added kindly, are less harmful than the general paralysis of structure which deforms almost all modern writing. Criticism of this sort, though it may be salutary, is negative. Those who like positive advice will prefer the opening sentence of *The King's English*: "Any one who wishes to become a good writer should endeavour, before he allows himself to be tempted by the more showy qualities, to be direct, simple, brief, vigorous, and lucid."

It would be strange if medical authors—whose main business is not letters, but science and sick people—were free from the errors of current prose. For their guidance there are, however, several finger-posts. Sir Clifford Allbutt's admirable book on the composition of scientific papers has helped countless writers of graduation theses to put their material together in clear and logical order, and to express themselves in decent English. Many besides Cambridge men are grateful to that little green volume for its hints on literary craftsmanship, and its warnings against such common blemishes as wordiness, slovenly arrangement, and the abuse of technical jargon. Further practical aid has been given by Sir Humphry Rolleston in his pamphlet on writing of theses for medical degrees. Another pamphlet of suggestions to medical authors, popularly known as the "A.M.A. Style Book," has been issued for many years past by the American Medical Association, to help would-be contributors in arranging manuscript, and to show the typographical practice laid down for the *Journal of the American Medical Association* and its associated publications. Having noted the faults that disfigured so many manuscripts sent to him, Dr. Simmons, at that time veteran editor of the journal, proposed one remedy for them all: that the art of writing should be more carefully studied and all writings submitted to thorough revision. Medical authors, in short, must learn to write better and take more trouble.

For the benefit of those seeking to follow his good counsel Dr. Simmons and his successor, Dr. Morris Fishbein, collaborated early last year in a series of articles which appeared at weekly intervals in their columns, now republished in book form under the title *The Art and Practice of Medical Writing*. Our colleagues begin by giving their readers an idea of what a paper ought to be, and why three-fourths of the manuscripts voluntarily offered to the *Journal of the American Medical Association* are rejected. Here we are glad to see the point made firmly and plainly that, while an author's rights must be respected, the medical editor's first duty is to his readers, whose rights are paramount. The several chapters indicate some common vices of style, with "specimens from real life"; and finishes with a protest against the misuse of certain words and phrases (like "to operate the patient") by medical authors on the other side of the Atlantic, and the overdoing of our old friend "marked" as the maid-of-all-work medical adjective. In this country Horace Hart's rules for compositors and proof readers at the Oxford University Press form a convenient guide. One chapter tells the beginner how to hunt up references, and what to avoid in compiling a bibliography. This is followed by three chapters on the technical side of preparing manuscript, pictures, charts, and tables for the press. Would that we could persuade all our own contributors to take it from Dr. Simmons that there really are "*practical reasons why editors prefer good, clean copy; not a carbon copy.*"

The concluding chapters give sound advice on revising the text of an article and the correction of proofs. The former is especially valuable for its insistence on the pruning knife as the writer's best friend. Here will be found the sad but most instructive tale of an

* Abstract of editorial in *British Medical Journal*.

essay printed in a medical journal (American but unnamed) which "presented most of the faults mentioned in this book, as well as many of those referred to in elementary books on grammar and rhetoric." This paper, 2,800 words in length, had evidently been flung to the printer without revision of any kind. The average number of words to a sentence was eighty-four. By way of object lesson one paragraph, consisting of a single inchoate sentence of 208 words, is quoted. The reader then sees, on the opposite page, how a sub-editor who knows his business could have cut this down and broken it up, greatly to its advantage, into seven sentences containing 123 words in all. With further pruning, also shown in graphic form, the paragraph is brought down to five sentences and ninety-eight words.

What, then, is the conclusion of the whole matter? It will be found in a sentence of Clifford Allbutt's: "Take pains, therefore; with yourself first, then with your reader."

CAMBRIDGE MEDICAL WORTHIES

A large gathering of Fellows and their guests took place at the Royal Society of Medicine on the evening of May 3rd, to enjoy a social evening and listen to an address of Sir Humphry Rolleston on Some Worthies of the Cambridge Medical School. Of the eighty presidents of the Royal College of Physicians of London since 1518, thirty-seven had held Cambridge degrees. Of these John Caius was certainly one of the greatest benefactors to his University (which was founded, so he had solemnly contended, 390 years before the birth of Christ). The originator of scientific anatomy, and physician to three sovereigns, Caius was responsible for the second foundation of Gonville College in the interests of medicine; but it was unfortunate that he consented to become its master, for he was out of sympathy with the militant protestantism of his time. His rooms were raided, saintly images and pictures were thrown out of the windows, and Caius himself was expelled from the University. Gonville and Caius College, said Sir Humphry Rolleston, had provided seven of the eighteen Regius professors in the University. Notable among these was Francis Glisson, who anticipated modern muscular physiology by a century, and whose observations on rickets, which finally appeared in the famous "*Tractatus de Rachitide*," almost certainly inspired the work of Whistler, published at Leyden. Following him the Cambridge school produced a long series of interesting and distinguished men: William Heberden the elder, the friend and medical attendant of Samuel Johnson, by whom he was described as "the last of the learned physicians;" Robert Glynn, who was born in Cornwall and educated at Eton, and who would never charge fees to Etonians or Cornishmen; Sir Busick Harwood, the witty and licentious professor of anatomy, who made successful experiments in blood transfusion, offered his guests at dinner the turbot dissected for his students, and sent Sir Isaac Pennington, the Regius professor, a challenge to a duel. The challenge, however, was ignored, and Sir Isaac lived to the age of seventy-two and died a bachelor, a fact which enabled him, Rolleston said, to make generous benefactions to his College. Pennington's successor was John Haviland. He found the medical school in a precarious state and under a threat of abolition. As a remedy he introduced regular courses in pathology and the practice of medicine, and made examinations a really serious test of what the candidate knew. The lectures of Thomas Watson (1843) were clear and concise and written in excellent English and enjoyed a long life as a text-book; Henry Thompson is described as a most cautious physician and is said to have once prescribed half a leech for a patient. Sir Humphry Rolleston spoke of the renaiscence of the medical school, which occurred during the middle years of the last century, and was associated especially with the names of Sir George Edward Paget, Sir George Murray Humphry, and Sir Michael Foster. Paget, he said, was the most distinguished Regius professor at Cambridge since Glisson. He was a quiet and very able man, and was responsible for the institution of the natural sciences tripos and bedside examinations for the M.B.; the D.P.H. was also started in his twenty years' term of office. Humphry was appointed surgeon to Addenbrooke's Hospital at twenty-two, when he had never even amputated a finger; he was a great anatomist, and an arresting and impressive teacher; he found the medical school insignificant and was largely instrumental in making it what it is. Foster laid the foundations of Cambridge physiology. After a brief account of the extraordinary career of Humphry's successor, Alexander Macalister, who qualified in medicine at seventeen and was professor of anatomy from 1883 till his death in 1919, Sir

Humphry Rolleston concluded his address by speaking of some of the less familiar aspects of the life of the late Sir Clifford Allbutt. Sir Clifford Allbutt had intended to devote himself to art, but fortunately for medicine changed his mind. He was the original for the Dr. Lydgate of George Eliot's "Middlemarch." All joined with his successor in remembering with respect the contributions of this great man to his university and to science.

At the end of the address there was an opportunity for conversation and to look at the interesting exhibits arranged in the library, many of them lent from the Wellcome Museum by courtesy of the curator. The society's practice of holding social evenings again justified itself to the full.

THE CHARACTER OF CLAUDIUS

We have recently received an interesting dissertation by Dr. Thomas DeCoursey Ruth, entitled *The Problem of Claudius: Some Aspects of a Character Study,* which was submitted some years ago to the Board of University Studies of the Johns Hopkins University in accordance with the requirements of the degree of Doctor of Philosophy, and has now been published.* The author points out that, with the rise of scientific method in scholarship, a very fair understanding of the characters of Julius Cæsar and Augustus, and even of Caligula and Nero, has been gained during the last century, but that the characters of Tiberius and Claudius, particularly the latter, remain perplexing problems. This research, it appears, was not undertaken merely to elucidate the character of Claudius, but also with the intention of laying due stress upon his mental and physical peculiarities, with the object of arriving at a proper estimate of their nature and extent and of their influence upon his personality and reputation. The study of his behaviour and physical defects as presented by ancient authorities leads Dr. Ruth to the view that Claudius was neither imbecile nor insane, but that he was the subject of infantile diplegia, or Little's disease. As a result of this physical disability Claudius was subjected to severe stresses, indignities, and hardships in childhood, and it would appear highly probable, as the author believes, that the abnormalities of behaviour which the emperor exhibited in his later years might have been largely due to the effect of these traumata acting on a sensitive disposition. The writer is not a physician, but he submitted the clinical data obtained from his research to competent medical men, and his diagnosis has been well thought out. It is evident that modern psychiatry and neurology are capable of shedding much light on the characters of historical personages, and this dissertation will no doubt have an interest and value for both the general and the medical historian.—*Brit. Med. Jour.*, Jan. 23, 1926.

* *The Problem of Claudius: Some Aspects of a Character Study.* By Thomas DeCoursey Ruth, Baltimore: The Lord Baltimore Press (Med. 8vo, pp.138.)

CRETINS—AN ETYMOLOGICAL NOTE

Gibbon speaks of the bitter intolerance of the Arian Goths of Africa and Spain and of the savage persecution inflicted upon their Athanasion subjects. One reads of a Catholic princess of Spain being "pulled about by the hair, inhumanly dashed to the ground, kicked till she was covered with blood, stripped naked and thrown into a pond;" of the persecution and murder of her orthdox husband, and of the allegiance to their belief of thousands of victims, which was strong enough to raise them to the heights of martyrdom in greater numbers, perhaps, than has ever been known in all the history of that devoted passion.

It may easily be understood that, although the Goths eventually became converted to the orthodox creed, still the memory and shame of the Arian persecution could not soon be forgotten. Still bearing the odium of their Arian misdeeds, these Spanish Goths at the time of the Moorish invasion were driven to seek refuge among the isolated glens of the Pyrenees. There they were called "Christaas" (and in France "Chritiens") to distinguish them from Jewish and other fugitives.

Hated by the Saracens and despised by their orthodox and Jewish neighbours, they were compelled to live apart. Isolation, confinement in narrow valleys, poverty and intermarriage were as potent in ancient times as in the present to produce the degeneracy and idiocy which resulted with great frequency among them.

Some abbreviation of their name, some looseness of observation and transference of terms has resulted in the name "Cretins" being applied to that type of idiocy commonly seen in

the Swiss Alps. And so, strangely enough, it happens that these unfortunates bear a title of shame acquired by the Gothic conquerors of Rome. So, too, in the use of this name some twelve hundred years later, does modern medicine recall to us the story of this ancient clash of race and creed.

—M. G. Burris, *Nova Scotia Bulletin*, Aug., 1926

CREMATION

As the population for a country grows larger and an increasing proportion of it migrates to the cities, disposal of the dead becomes a problem. Even now, in some communities, the economic loss from maintaining inviolable cemeteries is tremendous. The æsthetic aspect, furthermore, has considerable weight, as burying grounds may be unsightly; and they injure real estate values. The practical alternative to earth burial is cremation. In the United States, although thinking people have long favoured the method, cremation has not been widely adopted. Greater progress has been made in other places. Zurich, in Switzerland, for instance, allows interment in a suitable place but does not provide facilities for it. On the other hand, every facility for cremation is provided. A Japanese has recently developed a smokeless and odourless crematory in which combustion is rapid and which requires little fuel. In England cremation also is gaining favour. The number of cremations in Great Britain has increased from 445 in 1901 to 2,701 in 1925. This progress, however, was not effected until the Cremation Society of England spent much effort on education of people in the idea. During this process of education, it was discovered that the public shunned the subject of what happens to the body after death. They were willing, however, to discuss the æsthetic and sentimental aspects of the question. Beautiful gardens in which ashes might be dispersed appealed to them as a fitting memorial to the dead, much more appropriate than the traditional cemetery.

—*Jour. Am. Med. Ass.*, Aug. 14, 1926.

We note from a communication in *Science*, August 13, 1926, that Professor J. F. Dobson of the University of Bristol, and Dr. Brodetsky of the University of Leeds, have nearly completed their English translation of the immortal work of Copernicus, *De Revolutionibus Orbium Cælestium*. The original edition of this work is now extremely rare, and every copy commands a high price, and the history of the second and third editions are now attracting the attention of bibliographers and historians. The second edition was published in Basile in 1556, and is almost as rare as the first edition of 1543. The third and last edition in the original Latin was published in Amsterdam in 1617, and was noteworthy for the correctness of its text. This edition was reprinted in 1640. Upon the occasion of the 400th anniversary of the birth of Copernicus, a very fine edition was issued in 1873, printed anew from the original manuscripts. A German edition was published in Thorn in 1879. The English translation will be, we are sure, received with pleasure and will be regarded as an appropriate contribution to the history of astronomy and of science.

Medical Societies

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY

Recent Conceptions of Focal Infection

The thirty-second annual meeting of this society was held in Montreal, May 31 to June 2, 1926. During its sessions an interesting symposium was presented on "Focal infection", and papers were read by several who had given careful thought and study to this important question.

Dr. James Garfield Dwyer of New York discussed our present conception of the etiology of focal infection. He recognized the teeth, tonsils and intestines as the most common foci of infection, but considered the nasal sinuses as one of the less common. The entrance of bacteria and their toxins into the blood is especially favoured if they develop in a closed space such as an apical abscess of a tooth, or exist under pressure as in closed bony cavities. Some of the worst cases of focal infection, however, may be due to quite small amounts

XUM

of tonsillar tissue, which may be left behind after tonsillectomy.

The blood picture in focal infection is quite characteristic, and shows lymphocytosis, with an increase in the number of large mononuclear lymphocytes, and finally develops into a secondary anæmia. He called attention to the fact that many cases of so-called chronic catarrhal otitis media are focal infections which involve the ossicular joints. While the nasal sinuses in Dr. Dwyer's opinion are an infrequent cause of focal infection, a possible exception should be made of infected ethmoid and sphenoid cells. The sinuses which drain freely are, he thinks, the least likely to induce any systemic infection. It is when there is lack of drainage that absorption is more likely to take place and produce symptoms in other parts of the body.

Dr. Judson Daland of Philadelphia spoke from the standpoint of the internist. He considered that the teeth may infect the tonsils directly or through the blood stream, and he emphasized the fact that a streptococcus infection which may be harmless to a "carrier" may be toxic to a new host. The toxins in his opinion rather than the bacteria themselves produce the systemic symptoms. A focal infection may go on unrecognized for many years and the individual may regard himself as in good health, until middle life is reached; when with any slight failure in health definite symptoms may make their appearance as the result of the long continued systemic insult on the part of the bacteria. In Dr. Daland's opinion, tonsils when once infected should be removed promptly; he did not deem it necessary to wait for two or three weeks before advising operation. He emphasized, however, the well recognized fact that the size of the tonsil had nothing to do with the menace to the system. Small buried tonsils are often much worse than the hypertrophied type. In systemic infections vaccines according to Dr. Daland have a definite value, but only after the necessary surgery has been performed. Autogenous vaccines should be made immediately after removing the pus from the focus. Vaccines are best given in a series of ten doses, each dose being separated from the preceding by about five days. The first dose should be small and violent reactions from their injection should be avoided. In Dr. Daland's experience they are more useful in the aged than they are in the young.

Dr. Perry G. Goldsmith of Toronto spoke of infections arising from the nose, throat and ear, and emphasized the point that a good clinical history was even more important than a complete examination. Palpation of a tonsil is more important than a mere inspection. In carrying out palpation the finger of one hand is to be placed in the throat over the tonsil, and the other outside at the angle of the jaw. If there is definite fixation of the tonsil and the pressure elicits tenderness he regards such a tonsil as a menace and advises its removal.

Dr. Earl C. Rice of Philadelphia presented the dentist's point of view. All pulpless teeth in his opinion should be viewed with suspicion as it is almost impossible to determine whether a pulpless tooth is sterile or not, so long as it is *in situ*. The x-ray report he considers as frequently wrong. Only the exodontist is capable of reading and interpreting these pictures. Many erosions do not show in the film, and any conclusions drawn in such cases will be uncertain.

CAN INFECTED TEETH BE STERILIZED

Evelyn Sprawson, Director of Dental Studies and Lecturer on Dental Pathology, London Hospital, writes (*Lancet*, August 7, 1926) as follows: In order to test out whether infected roots can be rendered sterile I induced several students interested in the matter to make culture experiments and microscopic slide films from treated teeth after they were thought to be clinically sterile.

The results of these experiments, as far as they went, were not reassuring—indeed, were very disappointing. Some five or six teeth were dressed and tested frequently over a period of six months, and still were not sterile. A few others gave a similar result over rather longer periods, and one (fortunately owned by a bacteriologist) gave a positive sterile test when weekly dressings had been continued for a year. Two others gave positive sterile tests, only after about six months' treatment. The tests were begun on some thirty teeth, but patients (all but two being hospital patients) could not spare the time for the frequent and numerous visits needed, and so only very few were really fol-

lowed out. The matter is thus in urgent need of further research.

Conclusion

1. For single-rooted teeth with straight pulp canals conservative treatment may be justified, but that the prolonged treatment, time occupied, and necessary expense involved, will militate against such a course.

2. That for multi-rooted teeth (not so easy of access), or teeth with small and tortuous pulp canals extraction should be recommended.

Such is to my mind the only rational course—*i.e.*, teeth must either be proved sterile by culture or film, or extracted. Many patients will object to such treatment as being too drastic, and many dental surgeons will object on account of the comfort and restoration of function which they can afford to such teeth in other ways. It must also be borne in mind that many people are walking about with many (up to eight or nine or more) such rarefactions at the apices of teeth in their mouths and no general or local symptoms whatever. On the other hand, the removal of one or two such infections in one mouth has in several cases known to me been followed almost immediately by the disappearance of the general symptoms complained of, for which no other cause could be found.

It would seem that until we have some more certain means of sterilizing such teeth their conservation ought not lightly to be undertaken; till that time I would not take the responsibility of advising anyone to retain such infected areas in their mouths even if they were giving rise to no symptoms, nor would I retain one myself. If conservative treatment is decided on the patient should be informed beforehand of the possible result.

ANNUAL MEETING OF THE RESEARCH DEFENCE SOCIETY ON ADVANCE MADE IN THE PROBLEM OF CANCER

At the annual meeting of the Research Defence Society held on June 25th under the presidency of Lord Leamington, Dr. J. A. Murray, F.R.S., Director of the Imperial Cancer Research Fund gave an address on the advances recently made in the experimental study of cancer, a study which was started twenty-five years ago. Its course may be divided into three periods. The first began with the work of Jensen and Borrel on transplantation; the second was marked by the work of Fibiger and Yamagiwa and their followers, in which the production of cancer *de novo* in normal animals was achieved. The third period overlapped the second, and embraced the work of Peyton Rous, Blumenthal, Gye and Barnard, and others, on the possibility of micro-organisms entering into the mechanism of cancer origins. In general it might be said that the experimental investigations had made the definition of cancerous processes more precise, and had enabled a decision to be made between alternative statements of problems either of which might otherwise have been taken to be true. Jensen and Borrel at the end of last century showed that cancerous growths could be propagated in series in normal animals of the same kind by the introduction of fragments of original growth under the skin. The constant repetition of the same features in a succession of experiments on transplanted cancer in mice permitted the conclusion that the cancer cell behaved as it did because of differences inherent in it, or permanantly imposed upon it, and not because of the peculiarities of the individual in which the growth had arisen. Jensen also observed that an animal which had resisted a first transplantation was more immune to a second transplantation, though when workers began to use this process of immunity for transplanted tumours they found that even very energetic methods of immunization did not avail to stop the growth once it had started. The second period of cancer research concerned itself with the production of cancer *de novo*, not merely with its continuation and transplantation. Cancer might arise from exposure to products of shale or coal distillation, or to physical agents such as heat, ultra-violet rays, and x-rays. He described in particular the work on growths produced by tar in mice, and pointed out that the cancerous proliferation did not begin all over the area to which the tar was applied. Cancer was not a direct response to the irritant action of tar. After the process had started the growth still went on though the application of the tar was stopped. The tar evidently set up a condition which made the cancerous change possible. If a tar cancer was produced in an animal, and then removed by operation, a second tar cancer was more difficult to produce; it was true also that a second cancer was more difficult

to produce if the first had been a spontaneous cancer which had cleared up. In discussing the third stage of progress Dr. Murray came to the work of Gye and his colleagues. It was still too soon, he said, to express a final opinion on the validity of Gye's views, but it was only fair to say that this was the first time that the microbic formation of cancer had been presented in a form not incompatible with the known facts of cancer structure and behaviour.

—*British Medical Journal*, July 3, 1926

THE MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH

Rheumatoid Arthritis

At a meeting of the Medico-Chirurgical Society of Edinburgh on July 7th, Professor Ralph Stockman of Glasgow initiated a discussion on the treatment of rheumatoid arthritis.

Many suggestions, he said, regarding the etiology of the condition had been put forward through the ages, but there could be little doubt that it was a germ disease. The probability that there were several different organisms responsible was strengthened by consideration of the different clinical courses noted in the cases met with. In some cases there was a slow, insidious onset with implication of the small joints and gradual implication of the larger joints, perhaps extending over several years. Other cases began as acute arthritis of one of the larger joints with high temperature, rapid pulse, and great constitutional disturbance. Again, enlargement of the spleen and lymphatic glands might be found, indicating a general blood infection. Ultimately all cases took on a definite chronic course and tended to go from bad to worse. It was important to realize that rheumatoid arthritis was not merely an arthritis but a general disease of which the point of attack was the white fibrous tissue—the connective tissue—of the locomotory system of the whole body. The primary and essential pathology was a fibrositis with swelling and proliferation of white fibrous tissues locally. A perineuritis was set up in the small nerves in the inflamed tissue, and so pains, stiffness, and a fatigued feeling were produced outside the joints. In some cases there was more tendency to attack and erode the cartilage and bone. The sequels of all this included the well known symptoms—the muscular dystrophies, deformities, and contractures. The origin of the disease in any one case might be difficult, and was sometimes impossible, to define certainly. Professor Stockman, had seen cases in association with psoriasis, general dermatitis, and lupus erythematosus; rheumatoid arthritis also followed chronic tonsillitis and many other local septic conditions. Treatment resolved itself into two principal endeavours: (1) to combat the infection and bring it to an end, and (2) to remove the fibrositis throughout the body and correct any contractures of muscles and joints. General tonic measures and local application of heat in various forms, baths and spa treatment, had been used from remote times; these, however, had little effect on the general course of the disease. Vaccines from different strains of streptococci and staphylococci had proved of no specific value in Professor Stockman's experience, but during the past five years he had used protein shock or non-specific protein therapy. The benefit appeared to depend on the sharp feverish reaction which followed the injection. Professor Stockman tried various proteins in rheumatoid cases, but now almost confined himself to the typhoid bacillus as the most satisfactory. Beginning with a dose of 100 million intravenously, it was repeated every six days until six injections had been given, the dose being gradually increased to 200 or 250 million. The reaction started within an hour with a rigor and rise of temperature to 103°-105° with nausea, headache, and possibly vomiting. A profuse perspiration was followed by a return to a normal temperature. There was a very marked polymorphonuclear leucocytosis. The reaction lasted for six to twelve hours. There was also a focal reaction, the affected areas becoming painful, slightly swollen, and tender. This passed off, and next day the patient felt better. In about 60 per cent of upwards—250 unselected cases which Professor Stockman had treated—the infection was brought to an end. The treatment should be commenced early in the disease. The speaker finally referred to the formidable and tedious task of treating the contractures of muscles and joints.

—*Brit. Med. Jour.*, Aug. 7, 1926

Abstracts from Current Literature

MEDICINE

Stenosis of the Isthmus (coarctation) of the Aorta and its Diagnosis During Life. King, John T., *Arch. of Int. Med.*, July, 1926.

The author reports four cases, and brings the bibliography on the subject up to date. He states, that as a rule, congenital cardiovascular lesions are multiple; they present confusing signs, and are apt to produce a number of different diagnoses. Stenosis of the isthmus of the aorta, however, produces outspoken clinical signs, which, when present in characteristic form, may be recognized at a glance. He admits however, that the diagnosis is rarely made during life. In the first thirty-four years of the Johns Hopkins Hospital, only one case is recorded. Since 1923, three additional cases have been found in the wards and outpatient departments of that hospital.

By true coarctation is understood a comparatively sharp constriction, or more diffuse stenosis, sometimes a total obliteration of that portion of the aorta lying between the left common carotid artery and the entrance of the ductus botalli.

The collateral circulation in a well established case is as follows:

1. The superior intercostals anastomose with the intercostals from the aorta and carry blood into the aorta.

2. The transversalis colli arteries anastomose with the intercostals from the aorta and carry blood into the aorta.

3. The internal mammaries anastomose and carry blood into the intercostals, deep epigastric arteries, etc.

4. The innominate and left interscapular arteries are especially dilated.

The clinical signs that may occur are as follows:

1. Bilateral pulsation in the interscapular area, the pulsation progresses from above downward.

2. Dilated intercostal arteries.

3. Systolic murmurs over the anastomotic vessels in the interscapular areas.

4. Discrepancy between the size of the pulse in the arms and that in the legs.

5. Tendency for right radial pulse to feel larger than left and blood pressure in right arm to be higher than in left.

The two critical periods of the condition are the period in infancy when the anastomotic circulation begins to develop and, second, and in later years when the heart begins to show the myocardial strain imposed by the extensive collateral circulation.

The first case reported in this series was a labourer thirty-five years of age who had worked for years in a railway gang. He showed signs of intermittent claudication in the legs. The blood pressure in the right arm was constantly higher than that in the left. It had not varied during the past seventeen years, while the patient had been under observation.

The second patient was fifty-eight years of age, and a carpenter. When he came under observation, he not only had signs of coarctation of the aorta but also aortic insufficiency, arteriosclerosis and hypertension.

In the third case the patient was thirty-five years old, and a machinist by trade. He too had signs of aortic insufficiency as well as the coarctation of the aorta.

The fourth patient's age is not stated but she was evidently an adult. In addition to her coarctation, she also suffered from a streptococcus viridans septicæmia from which she recovered.

The author states that the electrocardiogram is not modified by stenosis of the aorta.

The lesion occurs more often in males than females. It occurs at any age after birth and is compatible in some cases with long periods of hard physical work.

The most frequent symptoms which occur are palpitation, dyspnœa, myocardial insufficiency, nocturia, cramps in the legs and intermittent claudication. L. C. MONTGOMERY

Digital Manifestations of Subacute Bacterial Endocarditis. Blumer, G., *Amer. Heart Jour.*, 1926, I, 257.

Dr. Blumer distinguishes two stages in bac-

terial endocarditis, a pre-embolic and an embolic stage, and states that there may be in chronic cases a considerable interval between the two, but the physician should be on the watch and recognize the first signs of any formation of emboli. He emphasizes the importance of some of the peripheral manifestations of embolism, and details certain signs which, if not embolic in nature, are still important in diagnosis. Perhaps the most common of such signs are the painful nodules usually formed on the fingers and toes, and which are associated with Sir Wm. Osler's name, though not first described by him. These are painful, ephemeral, erythematous nodules, one to one and a half centimetres in diameter occurring in crops chiefly on the fingers and toes and generally disappearing in twenty-four hours or less. They may suppurate but usually pass off leaving a brownish stain. Clinicians differ as to the frequency of these nodules, in Dr. Blumer's experience they were noted in about 40 per cent of patients. Emboli may occur in the deeper vessels of the extremities, and induce marked tenderness in fingers or toes.

"Splinter hæmorrhage" is a term suggested for linear hæmorrhages under the nails. Dr. Blumer has seen this condition in two cases; in each case occurring as linear hæmorrhages about 4 or 5 mm. in length, associated with tenderness of the finger tips. They exactly resembled splinters. Clubbing of the fingers is now recognized as of not infrequent occurrence in subacute bacterial endocarditis. It was noted in varying degrees amongst eighteen of the forty-eight cases reported by Dr. Blumer. He quotes Cotton as saying that clubbing is an associated condition in about 70 per cent of cases.

On the whole he thinks that these digital signs occur more often than is generally stated, and that they only need to be looked for more carefully.

H. E. MacDERMOT

Studies on the Epidemiology of Scarlet Fever. Pope, A. S., *Amer. Jour. of Hygiene*, 1926, vi, 389.

Dr. Pope brings clearly into focus some of the points regarding the occurrence of scarlet fever. These studies were based on reports and records covering cases of scarlet fever for forty years in Providence. This is the longest accurate record of the morbidity of scarlet fever in an American city, and is therefore excellent material on which to base conclusions regarding the disease.

It is shown from these records that the age incidence corresponds closely with the age incidence in American cities generally. The greatest incidence is at six years. About 75 per cent of all cases occur under ten, and 90 per cent under fifteen years. The greatest mortality in scarlet fever occurs in the third year of life. The mortality percentage is highest during the first year, and relatively low after the fourth year.

There has been no appreciable change in the recorded morbidity of scarlet fever in Providence, or in American cities as a whole, during the past forty years. In Providence the percentage of children attacked by the disease has remained practically constant in all the age groups except in infants, where there is a significant downward trend. But while the morbidity has thus remained practically constant since 1885, the mortality rates in Providence have fallen from about 40 to 2 per 100,000. The decline has been equally remarkable in most American cities. It seems probable on the available evidence that this decrease is due to the fact that the disease is less malignant, and not that control measures have been responsible.

It is interesting to note the number of cases in which a recurrence or a second attack of the disease occurred: out of 22,000 cases, 271 were recorded as second attacks, and it is probable that this is an underestimate. Still, that there is a relative immunity after one attack is shown by the fact that only 1.4 per cent of the cases were recorded among those who previously had the disease as among the general population. The fact that there is a marked preponderance of females in the higher age groups among the recurrences is taken as further evidence that infection with scarlet fever depends to a large extent on the intimacy of contact with those affected. There seems to be no evidence that the disease in itself was more infectious in epidemic than in non-epidemic years.

H. E. MacDERMOT

An Epidemiological Study of Pneumonia and its Mode of Spread. Rosenau, M. J., Felton, L. D., and Atwater, R.M., *Amer. Jour. of Hygiene*, 1926, vi, 463.

This study was undertaken in order to trace

the transmission of the pneumococcus from one case of pneumonia to another. The study of the epidemiology of such a disease as pneumonia is extremely complex, for it really is a group of specific diseases, and such factors as the existence of carriers, and the influence of exposure, fatigue, and specific immunity have all to be considered. The disease shows the peculiarity of manifesting only a feeble tendency to focal concentration, which is a characteristic of diseases spread by personal contact.

The classification of pneumococci into four types, three of which are specific and the other —type IV—is made up of forms not to be thus classified, has stood the test of much work. In Europe and Africa a similar typing has been found, but there is evidence that the relative distribution of the several types is irregular over the world.

As regards healthy carriers nothing could be found out regarding the source of the pneumococcus in their throats, and age seemed to have no relation to the occurrence of the carrier condition. There was, however, a definite excess of carriers in a group of contacts connected with a series of cases of pneumonia.

The study of a group of persons exposed to carriers of types I, II, and III showed that there was evidence of a definite transmission to others by carriers of types I and III. The fact was also brought out that cases of pneumonia give rise to carriers, and the part played by these as well as by the cases themselves, must be taken into consideration. In twenty-three cases of pneumonia due to type I, six were associated with carriers of this type, and in five cases of type III three were deemed to be contracted from carriers.

It was found that type III occurred more frequently in control population than types I and II taken together, and also that it seems to spread from both carriers and cases more rapidly than does type I; yet type III is the cause of not more than one-sixth of the number of cases of pneumonia in the United States due to types I and II. This lack of correlation between the distribution of type III and its relative responsibility for disease is somewhat paradoxical, and we require more knowledge of the individual immunity to it. Again, cases of types I and III are apt to produce more carriers than do the carriers produce cases, and further, carriers themselves do not seem apt to produce other carriers. H. E. MacDermot

Psychoanalytic Study of a Case of Organic Epilepsy. Menninger, Karl A., *Psychoanalytic Review*, April, 1926.

The case described was that of a young married woman, age nineteen, who had had convulsive attacks for the previous two years, and at the time of coming under observation had had a "typical attack" of status epilepticus in which she had a total of several hundred very severe tonic and clonic convulsions in ten days. She would stop breathing, clamp her jaws, bite her lower lip almost to shreds, and then extend her arms and legs, in rigid, rather bizarre attitudes. There was strong presumptive evidence that her father had syphilis, but the patient's serological reactions were at least not distinctly positive. She was given anti-luetic treatment, however, on general principles, but no improvement took place. She was considered to be a case of organic epilepsy, due to hereditary syphilis.

Through analysis of dreams, free associations and other psychoanalytic procedures it became clear that the occurrence of convulsions was in part psychogenetically determined.

The attempts of a girl of manifestly infantile psyche to adapt herself to married life gave rise to intolerable conflicts, and relief was accomplished by flight into convulsive attacks. Her convulsions began at the time of her engagement; they became aggravated by marriage, and her status epilepticus occurred during pregnancy. Her attacks decreased markedly after her separation and divorce from her husband.

Through psychoanalysis a "back-to-mother" trend was clearly indicated.

Dr. Menninger attributes the improvement in this case to (1) the transference to the analyst, (2) catharsis, *i.e.*, the emergence into consciousness of repressed and suppressed material, and (3) environmental alterations. A. G. Morphy

SURGERY

Fibro-Cystic Disease of the Humerus. Adams, A. Wilfred, *Brit. Jour. Surg.*, April, 1926.

Fibrocystic disease may be a localized, or a diffuse disease of one or many bones of the skeleton. In 1891 von Recklinghausen described the condition as the diffuse form and

regarded it as inflammatory. As far as is known at present, there is no infective basis, but the endocrine origin of the disease is growing in favour. It is a disease of youth and, as Bloodgood says, affects the humerus, femur, and tibia, in that order of frequency. A review of available statistics emphasizes the choice of the disease for the upper end of the humerus and ends of the femur. There are two factors common to these sites, namely, cellular activity and physical stress. It is here that rapid deposition of bone takes place, and unusual stresses fall, owing to rotary movements near a ball and socket joint.

The author in commenting on a review of the literature states that the predisposing influence in fibrocystic disease is the result of parathyroid deficiency, thereby altering calcium metabolism.

With regard to treatment, the curettage method without bone grafting (Bloodgood) appears to be the most effective of all methods. The possible benefit of parathyroid feeding should receive attention. R. V. B. SHIER

Acute Synovitis of the Hip in Young Children. Klineberg, S., *Arch. of Pæd.*, 1926, xliii, No. 4.

This condition is often mistaken for more severe disorders. It occurs quite frequently in children between the ages of two and eight years. It usually follows an injury but, at times, seems to be secondary to an acute infection. The symptoms are: pain in the hip, a unilateral limp and restriction of movement of the hip. The limb is drawn up and held in flexion. Occasionally there is slight fever. There is some fulness in the groin and tenderness.

Differential diagnosis must be made from the following diseases: (1) Legg-Perthes' disease of one hip; (2) tuberculous coxitis; (3) rheumatic arthritis. Legg-Perthes' disease comes on insidiously. It occurs between the age of six and twelve years. The x-ray picture shows a characteristic change in the neck and head of the femur, namely, broadening of the neck and flattening and fragmentation of the femoral head. In tuberculous coxitis, the onset is usually slow, the pain is very severe and usually referred to the inner side of the knee. Night cries are frequent but do not occur in acute synovitis. The roentgenogram, even in early tuberculosis, shows a suspicious cloudiness, whereas in acute synovitis it is negative. The later stage of tubercular coxitis with deformity, abscess formation and sinuses, allows no room for doubt as to the diagnosis. From rheumatic arthritis, the differentiation is made by the following points of difference: in acute synovitis there is never more than one joint affected; there is usually a history of trauma; there are no other evidences of rheumatic fever such as endocarditis; there is no tendency to recurrence and the condition disappears uniformly under rest and splinting. In suppurative coxitis, the local and constitutional symptoms are nearly always much more intense. The treatment of acute synovitis consists in immobilization and freedom from weight-bearing. This alleviates the pain and results in a cure in from two to three weeks. S. G. ROSS

PÆDIATRICS

A Comprehensive Plan of Treatment for the So-called Intestinal Intoxication of Infants. Powers, Grover F. *Amer. Jour. Dis. Chil.*, August, 1926, pp. 232-257.

This paper presents a complete and authoritative review of the treatment of this serious illness of infancy, and presents the routine treatment in use in the New Haven Hospital. The essential points in the treatment of intestinal intoxication centre about four major procedures, namely, the administration of fluid, the transfusion of blood, the withholding of food for a period of time, and the administration of food at the end of the period of starvation in gradually increasing amounts. Fluid may be administered by mouth, nasal drip, hypodermoclysis and intraperitoneal injections; it is rarely possible to give fluid successfully to these patients by rectum. Usually the patient is given an intraperitoneal injection of Ringer's solution, sometimes followed by an intravenous injection of a 10 per cent solution of glucose. After the patient has received fluid parenterally transfusion is performed. The patients are then usually so much improved that water may be given by the mouth. Ice cold water, 10 to 30 c.c. is given every fifteen to thirty minutes. If vomiting does not occur the quantity of water may be increased and the interval lengthened. Even when the amount of fluid intake by mouth is

large, the parenteral administration of fluid has to be continued once or twice a day for several days. If water is vomited it may be given by the continuous drip method, through a nasal catheter, following a gastric lavage with a 1 per cent solution of sodium bicarbonate. The amount of fluid which must be given is variable, few children seem to require less than one litre per day, the usual amount being about 1200 c.c. The author does not favour the intraperitoneal injection of glucose solution and admits to being unconvinced of the value of the parenteral administration solutions of glucose or of the advantage of any solutions by mouth, over water.

Transfusions are of 20 to 60 c.c. per kilogram of body weight, of citrated blood from donors of the same blood groups as the patient. Transfusions are repeated every twenty-four hours during the course of the first few days if the patient does not seem to be making satisfactory improvement, but rarely more than three are given. The first transfusion must be large and the others smaller because some patients do not react well to large transfusions repeated within a few days of each other. Blood transfusion is a most powerful weapon at our disposal in the treatment of this condition, by the intravenous route. This is preferred to exsanguination transfusion because a restoration of the blood in a quantitative sense, and to a large extent also in a qualitative sense, can be effected by ordinary transfusion.

Regarding feeding the author gives it as his opinion that a period of starvation during the stage of toxæmia is desirable in the treatment of intestinal intoxication. This period is usually from twelve to forty-eight hours, until toxic symptoms have disappeared or greatly diminished, depending on the nutritional condition of the infant and may be prolonged to one hundred and twenty hours as a maximum. However, mal-nourished babies seem to withstand starvation much better than would be supposed possible by one who has not practised this form of therapy. When feeding is re-established it should be done in a very gradual manner, that is the organism should be required to reassume its former burden by small daily increments, and the food should be given in small amounts at frequent intervals, beginning at feedings of 10 c.c. ten times daily and gradually increasing the size of the feeding and lengthening the interval. Regarding the kind of food to be given Dr. Powers has observed in the early stages satisfactory results with thin gruels. Any cows milk mixture seems as satisfactory as any other provided that it is cooked, does not contain over 20 or 30 per cent of the total calories in fat, and has a concentration a little less than breast milk. He does not believe that protein milk is the most satisfactory food for these patients. He has had more experience with dried, skimmed milk in which 2 to 5 per cent dextromaltose, barley or rice flour has been cooked, and the mixture subsequently fermented by lactic acid bacilli or soured with lactic acid, than with any other food except protein milk. Recurrences and recrudescences are most likely to occur in patients who have an infection and in those who are markedly mal-nourished, and are more difficult to treat than the initial illness. No therapeutic or dietary measure approximates the transfusion of blood to these patients. The infection from which an infant with intestinal intoxication is suffering may be amenable to special treatment; but usually the infection is dealt with most successfully, just as is the intoxication, by keeping the fluid intake adequate, and by transfusion of blood.

Sixty-four cases of intestinal intoxication form the basis of this report. Of those treated by the methods outlined here 33 per cent died; of those treated by other methods 70 per cent died. Dr. Powers feels that the mortality can be reduced to 25 per cent by adherence to these principles of treatment.

A consideration of the duration of the illness is an important factor in prognosis; the longer a patient has been in a state of intoxication the less favourable is the outlook. The severity of the symptoms and the degree of dehydration and acidosis are of relatively little value in prognosis.

R. R. STRUTHERS

Recurrent Vomiting. Josephs, Hugh, *Am. Jour. Dis. Child.*, May, 1926.

In spite of the fact that many causes of recurrent vomiting have been named, the real cause is undiscovered. The observations of Helliger and of Knoepfelmacher that limitation of carbohydrate would cause vomiting were confirmed by the author.

During attacks the blood sugar of five patients ranged from 0.037 to 0.081 per cent. The

blood sugar four hours after a meal following recovery ranged from 0.096 to 0.110.

The blood sugar of normal children and of children subject to recurrent vomiting four hours and sixteen hours after food were compared. Those subject to recurrent vomiting showed a far greater drop than the normals. The former showed acetone in the expired air, the normals did not.

Awaiting solution is the question whether the hypoglycæmia is due to the fact that these children have an unstable carbohydrate metabolism that is too easily increased, or is it primarily because they are unable to move their carbohydrate from relatively inaccessible stores?

LILLIAN A. CHASE

Torsion of Ovarian Cyst in Children. Reuben, M. S., *Arch. of Ped.*, 1926, xliii, No. 1.

Ovarian cysts in children have been reported in about 100 cases. They occur infrequently under the age of ten years. A large proportion of these cysts are malignant. In one series of twenty-six cases, sixteen showed this condition. They are often overlooked until their increase in size renders them palpable or until complicated by torsion, rupture or suppuration. When torsion occurs, the condition is often mistaken for appendicitis. The symptoms are general abdominal pain, rigidity, vomiting and fever. The tenderness and rigidity usually become localized to the lower abdomen, right or left, or both sides. Cystitis and pyelitis are often associated conditions. Rectal examination may reveal a tender mass, but not in all cases. Remission may occur due to untwisting of the pedicle. When the cyst is large, a globular mass may be felt in the lower abdomen.

The condition should be kept in mind in the differential diagnosis of appendicitis in girls. All cysts should be removed on account of the high incidence of malignancy in these cysts.

S. G. ROSS

Upper Respiratory Infection as a Cause of Cholera Infantum. Jeans, Philip C., and Floyd, Mark L., *Jour. Amer. Med. Ass.*, July 24, 1926, lxxxvii, 220-223.

That parenteral infection bears a relationship to gastro-intestinal disturbances is well recognized, but that it may be the direct cause of this most severe type of disturbance has been emphasized only recently. The purpose of this paper is to call further attention to mastoiditis and nasal sinusitis as causes of "cholera infantum", and to record further evidence, particularly in regard to sinus disease, that these infections are at least a common cause of the clinical picture. The authors do not state that infections at these sites constitute the sole cause of cholera infantum, but state that since they became aware of this relationship, all the cases of this infection observed by them have had upper respiratory infections as the apparent underlying cause.

Reports of several illustrative cases are included. The majority of the patients are about five months of age, and the condition is observed with greater frequency in those seasons in which respiratory infections are prevalent. Bottle fed babies seem much more prone to the condition than those breast fed. Perhaps the most striking feature of the upper respiratory infection is its obscurity, absence of nasal discharge, or in the mastoid cases, of symptoms referable to the ear.

The authors describe the usual symptoms of cholera infantum due to either cause, but suggest that in those cases due to mastoiditis the onset and course, and recovery following operation, are more rapid than in those due to paranasal sinusitis.

They suggest that some cases of chronic indigestion in infancy may be due to chronically infected and poorly draining sinuses. The treatment of the constitutional disturbance should be directed primarily at the underlying infection; special feeding alterations do not seem necessary.

R. R. STRUTHERS

DERMATOLOGY

Impetigo—A Brief Review. Lindsay, H. C. L., *Urol. & Cutan. Review*, April, 1926, xxxiv.

This article is a very excellent review of the causation, the clinical manifestations, and prophylactic and curative treatment of impetigo. The author deals with the differential diagnosis in detail. He especially emphasizes the necessity of using extreme care in hospitals in preventing epidemics of bullous impetigo, or pemphigus neonatorum in babies. Epidemics of this disease in hospital wards have caused a mortality of 50 per cent in the past. Detailed

instructions are given for special precautions and care in baby wards.

In the treatment of this, at times, rapidly spreading infection, sound measures are advocated, such as laying bare the individual bullæ, followed by a lotion of hydrag,, bichlor. 1-500 and the use of ung. hydrag. ammon, 2-5 per cent at the periphery of the lesions. Where mercurial sensitiveness is present potassium permanganate or creolin lotions 1 per cent in strength may be substituted. The author's favourite remedy is diluted black wash in conjunction with ung. hydrag. ammon.

J. F. Burgess

OBSTETRICS AND GYNÆCOLOGY

Diet in the Treatment of Preeclampsia. Harding, Victor J. and Van Wyck, H. B., *Jour. of Obstet. & Gyn. of the British Empire,* spring 1926.

Although the most generally accepted method of treatment of preeclampsia has been a marked restriction of protein foods combined with elimination, no scientific proof is available to prove the basis of such dietary restrictions. The majority of preeclamptics show little or no renal impairment in the elimination of nitrogenous products. Carbohydrates have always been justified, both theoretically and practically.

De Wesselow, in a recent work, has shown that preeclampsia is a particular example of parenchymatous nephritis, and on this ground he exludes salt from the diet and limits the fluid intake.

The authors were able to corroborate the work of De Wesselow. Cases are cited showing the effect of high protein, fat and carbohydrate diets on preeclamptic patients with restricted salt intake. Their conclusions may be briefly summed up, as follows: (1) restriction of salt is the one dietic factor in preeclampsia; (2) protein or fat, even in excess, cause no ill effects.

The salt restriction should not be kept up too long but can be regulated by laboratory control. When one is convinced that no further benefit will accrue by rigid salt restriction, 3 grms. are added to the diet.

The chloride content of the blood increases during pregnancy until the seventh or eighth month, and then shows a gradual decline. Plass and Bogert have demonstrated a progressive hydræmia which reaches a maximum between the sixth and seventh month and then subsides but does not reach the normal level until the tenth day postpartum. They suggest that the toxæmias of pregnancy are due to a continuation or exaggeration of this hydræmia, as evidenced by œdema. The question is raised whether such a hydræmia could be controlled by a salt free diet, or is the increasing hydræmia with a resultant toxæmia, inevitable?

Eleanor Percival

ANÆSTHESIA

Rectal Anæsthesia, Coleman, Robert B., *Brit. Med. Jour.,* June, 1926, p. 942.

At the C.M.S. Hospital, at Cairo, rectal anæsthesia is used for operations on the head, neck, chest and arm. Spinal anæsthesia is used for all operations up to the costal margin. The mixture, which consists of three parts of ether to one of olive oil is used in the proportion of one ounce to every twenty pounds of body weight. The rectum is emptied some hours previously. A hypodermic injection of morphine and atropine is given one hour and three quarters before the time fixed for the operation. Fifteen minutes later administration of the mixture is commenced. This should take fifteen to thirty minutes and should be completed an hour before the removal to the theatre. Very thorough washing out of the rectum is done afterwards. The writer has seen no rectal complications. Children over eight years of age do very well with this method. The only disadvantage is the extra work in the ward.

W. B. Howell

Balanced Anæsthesia. Lundy, J. S., *Minn. Medicine,* July, 1926, vii, 399.

The average healthy man thrives on a balanced diet. No one food statisfies all his requirements. Any one food taken in excess produces untoward results. In the same way instead of using one anæsthetic alone the combined effects of several should be used. A preliminary dose of an hypnotic should be followed by the injection of a local anæsthetic, either regionally or by infiltration; and then nitrous oxide or ethylene administered with

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care not to produce cyanosis. If necessary a small amount of ether can be added.

By using carbon dioxide in conjunction with general anæsthetics larger doses of morphine can be used and the absorption and excretion of ether accelerated. It is especially useful in nitrous oxide or ethylene anæsthesia in children. When used in multiple rib resection it permits the use of doses of morphine large enough to prevent coughing during the operation.

By the judicious use of preliminary doses of hypnotic drugs many nervous patients can be made amenable to operation under local anæsthesia. Morphine should not be given indiscriminately to patients who are to have ether by the open drop method because it disguises the pupillary signs which are necessary to enable the anæsthetist to avoid giving an overdose.

Regional anæsthesia is becoming more and more widespread. Its advantages are (1) Anæsthesia and relaxation are produced. (2) The injection being at a distant point does not affect healing or infection of the wound. (3) The tissues in the operation field are not distorted by the fluid injected. (4) It is not responsible for post-operation hæmorrhage. Its disadvantages are (1) Reactions occur after the sometimes difficult and painful injection of an excessive quantity of concentrated solution. (2) The production of anæsthesia is frequently slow. (3) Little artificial hæmostasis is produced.

The dosage of novocaine and epinephrin are discussed. The writer uses 5 minims of a 1-1000 solution of adrenaline chloride to each 100 c.c. of novocaine solution, regardless of the strength of the latter unless it is contraindicated either by the patient's general condition or by any untoward reaction following the injection of the first part of the solution. W. B. HOWELL

Ethylene: Uses and Precautions. Sise, Lincoln F., *Surg. Clin. of North America,* June, 1926, vi, 703.

Ethylene may be used as a routine anæsthetic in practically all operations except those on the abdomen and head. It is especially useful in operations for the removal of the thyroid gland. It may be used in abdominal operations where ether is contraindicated. When shock begins to appear during ether anæsthesia a change to ethylene is usually followed by a distinct improvement.

The writer prefers ethylene to nitrous oxide because: (1) More oxygen can be used. (2) Respiration is quieter. (3) There is more relaxation. (4) Analgesia is more profound.

Ethylene sometimes causes marked depression of respiration, especially if much preliminary drugging has been done, but this can be controlled by the use of carbon dioxide.

The chief objection to ethylene is its inflammability. All possible sources of ignition such as the use of cauteries, fulguration apparatus, ventilating fans, etc., must be avoided. To guard against static sparks, machine, table, patient and anæsthetist should be connected together by an electric conductor. Metal masks should be used instead of celluloid. Extra tanks should be stored in a room shut off from the rest of the hospital and freely ventilated from the outside. Since a large proportion of the recorded explosions have taken place before anæsthesia, just as mask was about to be placed on the patient's face or after the administration was finished, the writer makes a point of beginning and ending ethylene anæsthesia with nitrous oxide. This has the additional advantage of preventing the patient noticing the unpleasant smell.

W. B. HOWELL

Spinal Anæsthesia. Sise, Lincoln F., *Surg. Clin. of North America,* June, 1926, vi, 723.

In the Lahey Clinic spinal anæsthesia is used where the condition of the patient is such that a general anæsthesia appears to be dangerous; and almost entirely in operations below the umbilicus novocaine is used. The site of puncture is the second lumbar interspace for all operations above the groin. The height of anæsthesia is determined by regulating the amount of cerebro-spinal fluid withdrawn. The withdrawal of 10 c.c. causes the anæsthesia to reach the groin, of 15 c.c. the umbilicus and of 17 or 18 c.c. the epigastrium.

Ten minutes after the injection is made it is absolutely safe as well as beneficial to lower the head of the table. The patient must be carefully watched, especially his blood pressure and respiration. He should be kept flat in bed until recovery from anæsthesia begins and vasomotor control is established. Any raising

of the upper part of the body may induce syncope. Fall of blood pressure is to be treated by lowering the head of the table, administration of CO_2 with or without oxygen, and subcutaneous injections of adrenalin. If the drop is severe intravenous salt solution to which adrenalin has been added, must be given promptly.

Spinal anæsthesia is contraindicated when the blood pressure is low, in shock and in active syphilis. It requires special caution when there is myocardial degeneration. W. B. HOWELL

OTO-RHINO-LARYNGOLOGY

The Treatment of Chronic Tonsillitis. I. Choice of Methods in Chronic Tonsillitis. Fraser, J. S., *Lancet*, Feb., 1926, 1:408. **II. Tonsillectomy in Adults and Children.** Fraser, J. S., *Lancet*, Feb., 1926, I, 454.

There are two types of tonsil: (a) the pedunculated, which is the protruding or prominent tonsil; (b) the embedded or the submerged tonsil; its size is very deceptive for it may be much larger than it appears to be. The efferent lymphatics of the tonsil drain into the jugulodigastric or tonsilar gland at the angle of the jaw. The tonsil is part of the lymphatic ring which guards the entrance to the alimentary and respiratory tracts. They are most active during early life. The crypts may act as culture tubes from which toxins are absorbed to produce an active immunity. If there were an internal secretion from the tonsil the bad effects from its removal should have become manifest.

About 6 to 10 per cent of school children have such tonsillar hypertrophy as to require enucleation. If there is infection in the crypts and below the epithelium, it is lacunar tonsillitis. If the infection has broken through the capsule of the tonsil it becomes peritonsillitis ending frequently as a peritonsillar abscess. Trouble in the tonsil may date from one of the exanthemata, or on the other hand the tonsil may serve as the portal of entry for the streptococcus of scarlet fever or of rheumatic fever. The organisms found in the tonsils are many and varied. When hypertrophy is the indication for removal, tuberculosis is found in about 1 per cent of the cases examined by the bacteriologist. When in addition there is marked enlargement of the cervical lymph glands the baccilli have been found in the tonsil in 38 per cent of the cases (Carmichael). In tuberculous cervical adenitis 88 per cent of the cases are due to infection spreading from the tonsil, the tonsil often remaining normal in appearance.

A complete list is given of the indications for tonsillectomy, which may be summarized as, infections, hypertrophy, enlargement of the cervical lymph glands, and conditions in which there is definite evidence that the tonsils themselves are diseased and may be connected with disease in other parts of the body. The contra-indications to operation are, high temperature, hæmophilia, acidosis, and general debility.

In the way of treatment there is the conservative method of using applications and gargles, or the radical method of complete enucleation of the tonsil by operation. A detailed description is given of the guillotine, and of the dissection method of operation. The author prefers the guillotine method with general anæsthesia for children, and the dissection method under local anæsthesia for adults.

The opinions regarding post-operative hæmorrhage are varied and unreliable. Post-operative hæmorrhage results in about 0.5 to 2.0 per cent of cases of tonsillectomy. As a preventative measure calcium chloride or horse serum may be administered before the operation. For hæmorrhage the author prefers conservative methods such as removing clots and applying pressure with the use of local astringents. Ligaturing the bleeding point is mentioned but the reader is warned regarding many difficulties.

The results following tonsillectomy, in cases in which the operation is indicated, are very gratifying. Subsequent colds, if any, are never so severe. The remote results are varied depending on the nature of the condition. In chronic toxæmia the results have been excellent.
W. J. MCNALLY

Herpes Zoster Oticus and Allied Conditions with Notes of Three Cases. Guthrie, Thomas, *Lancet*, April, 1926, I, 710.

The author credits J. Ramsay Hunt with the first comprehensive description of the syndrome now known as Herpes Zoster Oticus. It is an inflammation of the geniculate ganglion of the facial nerve. The afferent fibres concerned are the chorda tympani and the sensory fibres incorporated in the auriculotemporal branch of

the third division of the fifth nerve and of the auricular branch of the vagus. The area of skin affected by the herpetic inflammation of the geniculate ganglion is a cone shaped area the apex of which is the drum membrane and the base is the auricle. If the inflammatory process spreads to the motor fibres of the facial nerve there is a facial paralysis. The ganglia of Corti and Scarpi may also be involved causing deafness and vertigo. Allied conditions are herpes facialis where the Gasserian ganglion is involved, and herpes occipito-collaris from inflammation of the upper cervical ganglion. Herpes zoster oticus must be carefully diagnosed from acute otitis media and mastoiditis. The duration of the disease varies. The pain may last three weeks, the facial paralysis may last for days or weeks. In rare cases there may be some degree of permanent deafness or facial paralysis. The treatment consists of sedatives for pain, massage and electrical treatment for the paralysis, and local applications for the herpetic eruption. Detailed symptomatology is given of three cases.

W. J. McNALLY

Tuberculosis of the Larynx: Treatment with the Galvano-Cautery; Indications; Results; Technique. Thomson, Sir St.Clair, *Lancet*, June, 1926, I, 1084.

The three chief conclusions arrived at are that: (1) as a local help the galvano-cautery is the most valuable remedy we possess at present; (2) the cases in which it is suitable are relatively few; (3) but these cases well selected yield a cure in a large proportion of cases.

No case is ever submitted to the galvano-cautery that has not been treated in the sanatorium for three months, the effect of voice rest having first been determined. The most promising cases are those in which the disease is restricted to the intrinsic larynx, *i.e.*, the vocal cords, the inter-arytenoid and arytenoid regions. The treatment is dangerous during an acute invasion by the disease or if there is perichondritis or pain and dysphagia. The general condition of the patient must also be studied. If there is an unsteady temperature, quick pulse, failing weight or feeble resistance, it is unwise to use the cautery.

During a period of fourteen years at Midhurst Sanatorium 17 per cent of the total number of patients had laryngeal tuberculosis. Of the 620 cases of laryngeal tuberculosis 16.61 per cent only were considered suitable for cautery treatment (many cases are cured by silence and whisper). The number of treatments average about 3 for each case; the applications should not be repeated oftener than once a month. A cure resulted in 62 per cent of the cases of the first ten years of the series, and in 69 per cent during the last four years. In the first ten years a cure was secured by silence and whispers, and the galvano-cautery in 25 per cent of the cases of laryngeal tuberculosis. The author prefers the indirect method of applying the galvano-cautery under local anæsthesia. A fine platinum point is used at white heat at the edge of the ulcer, the object being to promote inflammatory and limiting fibrosis. Several punctures may be made at one sitting, the number depending on the size of the diseased area.

W. J. McNALLY

Exophthalmic Goiter in Childhood.—Thirty cases of exophthalmic goiter occurring in children less than fifteen years old are reviewed by Henry F. Helmholz, Rochester, Minn. Compound solution of iodine, administered in doses of from 5 to 10 minims (0.3 to 0.6 c.c.) three times a day, reduced the basal metabolic rates and toxic symptoms very markedly. It made preliminary operations unnecessary in the last eleven cases. Of twenty-four patients operated on, two died, one in crisis twenty-four hours after operation and the other from bronchopneumonia one week after operation. The duration of the symptoms, which varied from six months to eight years, indicates that frequently this disease is not recognized early or its seriousness is not appreciated. The patients came largely from Minnesota, Iowa, Illinois and Wisconsin, in the order named. Tachycardia was noted in 100 per cent of the cases. The thyroid gland was definitely enlarged in all but two cases. All but two patients complained of nervousness. Emotional instability was perhaps the most marked feature. Exophthalmos was definite in twenty-five of the thirty cases, and in one of the remaining five there was the characteristic stare.—*Jour. Am. Med. Ass.*, July 17, 1926.

Obituaries

Dr. H. Arnott of London, Ontario, died on August 4, 1926, at the advanced age of eighty-two. He was one of a small group of enthusiastic physicians who founded the Medical School of the University of Western Ontario forty-four years ago. He was a Professor of Clinical Medicine and at a later period, Dean of the Faculty. He graduated from the University of Toronto in 1870 and had as a classmate the late Sir William Osler. He spent some time in New York at post-graduate work before starting in practice at Arva, Ontario. Ten years later he moved to London. Ill health caused him to retire from active practice several years ago.

He is survived by two sons, Dr. D. H. Arnott of London and Dr. H. S. Arnott of Hamilton.

Dr. John C. Colby, warden of Stanstead county, and mayor of Stanstead died at Stanstead on August 27th.

Dr. Colby, after a busy day, retired rather late Thursday night. At noon on Friday the family became anxious, and, on going to his room, found that he had passed away. He had suffered from heart trouble.

Born at Stanstead, the son of Hon. Charles C. Colby, who for twenty-five years was a member of parliament, Dr. Colby lived in Stanstead throughout his life, devoting his whole time to a large medical practice, and to the welfare of the community. Two years ago he was elected mayor of the municipality and occupied that office at the time of his death. He was prospective conservative candidate in the coming election.

He is survived by two children, Harriet and John Colby. His wife predeceased him some years ago.

Dr. J. A. Cousineau, ex-president of the National Amateur Athletic Association and a well-known member of the National Lacrosse team, died at his home, 4086 St. Denis Street. Dr. Cousineau had been ill for two years. He was born in Montreal, and received his training at St. Mary's College and at Laval University, where he took his medical degree. He held the position of City School Inspector for a number of years.

Dr. John Howland. We regret to note the death of Dr. John Howland, Professor of Pædiatrics in Johns Hopkins University, who died in London, England, on June 30th, at the age of fifty-three. He had sailed for Europe two months previously to visit his brother who was at that time in Greece; after which he had visited many of the European clinics. Although in letters written from Paris he stated that he was entirely well, Mr. Abraham Flexner who saw him there, reported that he looked pale and thin and complained of easily induced fatigue. On his arrival in London he was taken acutely ill with severe hæmorrhages apparently of gastric or duodenal origin. An operation was performed under the impression that the condition was duodenal ulcer. This was found to be a mistake and death occurred a few days later. A meticulous observer, gifted with a most unusual memory and a rich endowment of native shrewdness his diagnoses were always as close to being correct as was humanly possible. His relations to patients were always marked with great conscientiousness and consideration. In his treatment he was always conservative. He accepted new forms of treatment only after their value and freedom from danger had been proven by others. As an investigator, Howland brought to bear an unusual amount of critical judgment. He was most industrious. As a teacher he was exceptionally gifted and was twice accorded the honour of being the lecturer before the Harvey Society at New York.

Dr. John H. Tripp was born at Fitzroy Harbour, Ontario, Dec. 14, 1872. He attended Arnprior High School and graduated from the Manitoba Medical College in 1898. He first practised at Roland, Man., but moved to Oxbow, Sask., in 1901. In 1919 he moved to Togo, Sask., where he had a large farm. Since that time, while he remained in active practice, he devoted a considerable time to the managing of his farm. About four months before his death which occurred on June 25th, he felt a pain in his chest which he diagnosed as angina pectoris. The pain was never very severe and rarely bothered him. On June 25th he was very busy with his practice but felt the pain more or less all day. He retired about 10:30 read a book for a few minutes, and after about half an hour's sleep he awoke feeling great distress, and in about half an hour he had passed away.

It is with extreme regret that we have just learned of the death of Professor George J. Adami, Vice-Chancellor of the University of Liverpool, and for many years professor of pathology at McGill University. A detailed notice will appear in our October number.

We regret to learn of the death of Dr. W. C. Laidlaw, Deputy Minister of Health of Alberta of which we received word as we go to press. A full obituary notice will appear in our next issue.

News Items

GREAT BRITAIN

REPORT ON THE HEALTH OF THE ARMY FOR THE YEAR 1923

Perhaps the most striking feature in this report is the fact that the greatest single cause for invaliding from the army within the last fifty years has been circulatory disease. This was excelled only by disease of the nervous system, and that in the period of 1914 to 1921, but in 1923 circulatory disease was still the predominating cause for invalidism.

For the year 1923 malaria caused the greatest number of admissions to hospital which is accounted for the post-war commitments in the East. Admissions for venereal disease show a marked decrease for all areas: the highest incidence of this disease was in the Rhine Army: it was noted that the improvement of industrial employment in Germany was followed by a considerable reduction in the amount of venereal disease in the army. Much of the decrease for 1923, however, is to be attributed to the antivenereal propaganda and preventive measures, with the contributing factors of improved depots and increased temperance.

XUM

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

A quarterly meeting of the college was held on July 20th, the President, Dr. G. M. Robertson in the chair.

Dr. James Davie Gilruth was introduced and took his seat as a Fellow of the College. Dr. Lorrain Smith moved approval of the annual report by the Curator of the laboratory. It was announced that Dr. James Walker Dawson had been appointed Morison Lecturer for 1927. The "Victoria Jubilee Cullen Prize" was awarded equally between Dr. G. Lovell Gulland and Dr. Alexander Goodall.

Letters from the Dean of the Medical Faculty and from the Secretary of Edinburgh University thanking the College for its share in the recent Bicentenary Celebrations were read.

LONDON POST-GRADUATE HOSTEL

On July 27th Sir William de Courcy Wheeler took the chair at a meeting of the Hostel at the Imperial Hotel, London, when Prof. H. Finsterer (Vienna) opened a discussion on operations of the stomach, in which he advocated gastrectomy for all cases of ulcer. It was not altogether fair, he said, to compare the results of gastro-enterostomy with those of gastrectomy, as the former could often be done successfully by any surgeon, whereas gastrectomy should be performed only by experts.

On July 30th Sir George Lenthal Cheatle opened the discussion on the difference between hyperplasia and inflammation, drawing his conclusion from the study of the breast. It was possible, he said, to have a cell which was potentially malignant yet held in check by the basement membrane; if such a cell were transplanted, rapid malignant growth ensued. Age was important, and what was inflammatory in a tar-worker of thirty was definitely malignant in a man of fifty. So-called chronic mastitis was actually hyperplasia of one of the component parts of the gland or its duct. He pleaded for systematic examination of all parts of a breast removed for nodular growth owing to the frequent presence of early carcinoma.

The report of a select committee on nursing homes appointed by the Government has just been received. Important recommendations are made. It is proposed that legislation shall be prepared to set up a scheme for the registration and inspection by county and borough councils of all nursing homes. The committee recommends that the inspection shall be limited to an inquiry into the suitability and organization of each nursing home, but shall not embrace any enquiry into the medical records or private affairs of patients. All types of nursing homes are included in the recommendation. No home is to be exempt on the ground that it is controlled by a physician. Any appeals made against a refusal or a cancellation of registration may be referred to a committee appointed by the Minister of Health. It is recommended also, that the matron or other person in charge of a nursing home must be a fully qualified nurse. The extension of this condition to a certain number of the staff employed should also become desirable.

The degree of doctor of science has been conferred by the University of Oxford on Professor A. C. Seward, professor of botany, master of Downing College and vice-chancellor of the University of Cambridge; Sir William Bragg, Fullerian professor of chemistry and director of the Davy Faraday Research Laboratory of the Royal Institution, London, and Sir Walter Morley Fletcher, secretary of the British Medical Research Council.

The degree of doctor of science will be conferred in October by the University of Cambridge on Sir Ernest Rutherford and on Professor W. S. Holdsworth on the occasion of the celebration by Trinity College of the Bacon Tercentenary.

The death occurred in London, Eng., on July 20th, of Susan Stairs, wife of Major-General G. Carleton Jones, C.M.G. Mrs Jones was a daughter of the late Robert Morrow, and spent her early years at "Bircham", Halifax. She achieved considerable success as a writer of fiction under the name of Helen Milicete. Among the more important of her books were *A Detached Pirate, A Girl of the North, The Fascinating Mr. Savage, The MicMac,* besides many short stories.

At the close of his address at the Nottingham meeting, the president of the Association, Dr. R. G. Hogarth, presented to Sir Humphry Rolleston, Regius Professor of Physics in the University of Cambridge, the association's gold medal of merit and an illuminated address in recognition of his scientific work and of his distinguished services to the profession and the British Medical Association.

Sir Berkeley Moynihan, (Leeds) has been elected president and Sir Cuthbert Wallace, and Mr. Francis Day Steward, vice-presidents of the Royal College of Surgeons for the coming year.

John Francis Hall-Edwards, known for his work and sufferings in connection with x-rays, has been elected an honorary member of the British Medical Association in recognition of his services to medicine.

The Victor Horsley Memorial lecture of the British Medical Association was delivered on July 9th at the association's headquarters by Mr. Wilfred Trotter, surgeon to the University College Hospital, on "The insulation of the nervous system."

GENERAL

The American College of Surgeons will hold its sixteenth Annual Congress in Montreal, from October 26th to 29th. Over 2,000 members are expected to attend. Clinical demonstrations will be given daily at the Montreal General Hospital, The Royal Victoria Hospital, the Hotel Dieu, Notre Dame, the Misericordia, Ste. Justine, Shriners' Hospital, Children's Memorial and the Western Hospitals by members of the medical profession in Montreal as well as by visiting surgeons. The headquarters of the Congress will be at the Windsor Hotel, where the inaugural address will be delivered and clinical lectures will be given. A special series of clinics will be held at the various hospitals for specialists in the ear, eye, nose and throat diseases. A meeting of hospital administrators from all over North America will assemble in the morning and afternoon of the first two days to discuss the management and standardization of hospitals. The presidential address will be given on the

evening of Monday the 26th; scientific meetings will be held on Tuesday, Wednesday and Thursday evenings; and convocation will be held on Friday evening. Dr. W. W. Chipman, of this city is the President-elect of the American College of Surgeons; the President being Dr. Rudolph Matas of New Orleans. Among the leading surgeons expected to attend from abroad are: Sir William I. deCourcy Wheeler, Dublin; Mr. Sampson-Handley, London; Archibald Young, Glasgow; and Mr. John Fraser, Edinburgh. Some French surgeons are also expected.

The international post-graduate medical courses will be given in Berlin under the auspices of the Medical Faculty of the University and the Assembly of Academical Lecturers. The courses will last from the 4th to the 30th of October, and include a course in medicine, emphasizing the latest advances; a course in neurology; and courses in special departments as may be desired. Further information may be obtained from Kaiserin Friedrich-Haus, Berlin, NW 6, Luisenplatz 2-4.

Dr. Casey A. Wood has spent a year in Ceylon collecting material on the comparative vision in birds, and has now gone to Kashmir to continue this study for six months, when he will return to Chicago by way of China and the Phillippine Islands. Dr. Wood has been made honorary collaborator in the Division of Birds, Smithsonian Institution, Washington, D.C., on account of his contributions to ornithology.

Dr. J. Clarence Webster, Shediac, N.B., formerly professor, and head of the Department of Obstetrics and Gynæcology at Rush Medical College, received the honorary degree of Doctor of Laws at the recent commencement exercises at Dalhousie University, in recognition of his work in forwarding the interests of education, and of his research into the history of the Maritime Provinces.

At the annual meeting of the Canadian Institute of Chemistry the following officers were elected: President, W. Lash Miller, Toronto; Secretary, J. B. Ferguson, Toronto; new Members of the Council, M. A. Parke, of Winnipeg; A. L. Kelsall, of Annapolis Royal Nova Scotia; R. M. MacLean, Montreal; R. T. Elworthy, of Ottawa, and A. Bruce Macallum, London, Ont.

The Medical Society of Nova Scotia has decided to celebrate the jubilee of the graduation of Dr. John Stewart whom we all admire, by establishing at Dalhousie University a chair of surgery to be called by his name and it is proposed to raise $50,000.00 to endow this chair.

Dr. Harvey Cushing of the Harvard Medical School was elected president of the American Surgical Association at its last annual meeting in Detroit.

The Honorary degree of D. Litt. was conferred on Dr. Harvey Cushing at the annual commencement of Jefferson Medical College on June 4th.

We note from the *Nova Scotia Medical Bulletin* that Dr. A. G. Nicholls, Provincial Pathologist, and for many years on the medical staff of Dalhousie University, has resigned.

Dr. William H. Park, professor of bacteriology and hygiene of New York University, was awarded the degree of D.Sc. by that university at its recent commencement.

On the occasion of his seventieth birthday, May 6th, the city of Vienna conferred honorary citizenship on Dr. Freud.

By the death of Mrs. M. Manford Bridge, the contingent bequest of $6,000,000.00 left by Dr. Norman Bridge to various hospitals and universities will be released. By the will of Mrs. Bridge the further sum of $500,000.00 is left to various institutions.

A cablegram has been received at Harvard University stating that the expedition to study disease in the interior of Africa has arrived at Monrovia, Liberia, and is ready to proceed into practically unexplored territory. The expedition will for the present explore the interior along the Congo River where a special study of sleeping sickness will be made.

The British Secretary of State for the Colonies has appointed Dr. A. T. Stanton, formerly director of government laboratories in the Federated Malay States to be his chief medical adviser in regard to colonial appointments.

Dr. J. W. Bridges, professor of psychology at McGill University, has been appointed special lecturer in genetic psychology during October and November, at Clark University, in the absence of Professor Walter S. Hunter.

The League of Nation's commission of experts on reform of the calendar has decided to recommend that the second Sunday in April be the fixed date for Easter. This recommendation is subject to the approval of the Holy See.

On Commemoration Day at Glasgow University a tribute was paid to the memory of Sir William McEwen who had occupied the regius chair of surgery for thirty-three years. It was intended that Professor Harvey Cushing should deliver an oration on the life and work of McEwen, but as he was unable to go to Scotland, Mr. Archibald Young who succeeded Sir William McEwen in the regius chair delivered it in his place.

Sir Hugh Anderson, F.R.S., Master of Conville and Caius Colleges, Cambridge, has been appointed a member of the advisory committee on the administration of the Cruelty to Animals Act, in the place of Sir John Rose Bradford who resigned from the committee upon his election as president of the Royal College of Physicians of London.

NOVA SCOTIA

The Western Counties Branch of the Medical Society of Nova Scotia held its annual meeting at Yarmouth on the 27th of May. Dr. W. C. Harris reported a case of tubal pregnancy (see Case Reports) which was discussed by Dr. L. M. Morton and Dr. T. A. Lebbetter. Dr. G. W. Farish reported a case in his practice in which a mother had twice given birth to acephalic children. On each occasion the liquor amnii had been in great excess.

The election of officers resulted as follows: President, Dr. W. C. O'Brien, Wedgeport, Vice-Presidents, Drs. S. H. Thibault, Meteghan, L. O. Fuller, Shelburne,

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A. R. Melanson, Eel Brook; Secretary-Treasurer, Dr. F. A. Lebbetter, Yarmouth.

An adjourned meeting of the Branch was held on June 7th, when the programme comprised several addresses by lecturers of the Canadian Medical Association extra-mural courses. The speakers at this meeting were Drs. Frank S. Patch, of Montreal, L. M. Murray, of Toronto, and E. Kirk Maclellan of Halifax. Drs. Patch and Murray followed the same lines as in their addresses at Halifax, which were reported in the August number of the *Journal*. A résumé of Dr. Maclellan's address, on indications for Cæsarian section, will appear in the next issue.

At the annual meeting of the Lunenburg-Queens Branch of the Medical Society of Nova Scotia, which was held at Bridgewater on June 25th, the following officers were elected: President, Dr. F. R. Davis, Bridgewater; Vice-President, Dr. G. A. Barss, Rose Bay; Secretary-Treasurer, Dr. C. A. Donkin, Bridgewater.

The annual meeting of the Cumberland County Branch of the Medical Society of Nova Scotia was held at Amherst, on the fourteenth of June. In addition to a large number of Cumberland physicians, several visitors from the near-by portions of New Brunswick were in attendance. The scientific part of the programme was ably filled by Dr. L. M. Murray, of Toronto, and Dr. F. S. Patch, of Montreal, who were visiting the several branch societies in connection with the extra-mural lectureship scheme of the Canadian Medical Association. The newly elected officers of the Cumberland Society are: President, Dr. Ross Millar, Amherst; Vice-President, Dr. M. J. Wardrope, Springhill; Secretary-Treasurer, Dr. W. T. Purdy, Amherst. The next meeting is to be held at Springhill early in September.

A preliminary report on the statistics for the city of Halifax for the month of June indicates that there were 111 births and sixty-seven deaths. Only four deaths of infants were reported. The average age at death of those who died was approximately forty-seven years. Seven of the deaths were due to one or other form of tuberculosis.

Dr. and Mrs. M. A. Perrin, of Yarmouth, celebrated the fiftieth anniversary of their marriage on the 16th of July.

A bulletin of the Department of the Public Health, reporting on the vital statistics of Nova Scotia for March last, indicates that during that month there were 991 births and 587 deaths, as compared with 993 births and 652 deaths in March 1925. Tuberculosis, all forms, accounted for forty-two deaths, as compared with sixty-four in the same month of last year. The infant mortality rate was 63.5; in March 1925, it was 95.6.

The proposal to build a new hospital at Pictou has been revived. The accommodation of the present hospital is being overtaxed. Some years ago plans were prepared for a new building, but it was found that the cost would be so much greater than was anticipated that action was postponed. A considerable sum has been added to the treasury in the meantime, and it is felt that the work may now be undertaken.

Dr. O. R. Stone, of Sherbrooke, recently passed through a very unpleasant experience. After a long swim, he became acutely ill and for some time his condition was very critical. Fortunately he was able to direct his companions what to do for him, until a colleague could reach the scene. For some time the issue was in doubt, but happily an excellent recovery followed.

Among summer visitors to Halifax were Professors Abel, of Johns Hopkins University and J. J. R. Macleod of the University of Toronto.

Dr. George H. Murphy, of Halifax, read a paper on "The abdominal emergency", at the annual meeting of the New Brunswick Medical Society, held at Moncton in July.

Dr. K. A. MacKenzie, of Halifax, accompanied Sir Henry Gray, of Montreal, to Newfoundland in July, in furtherance of the Canadian Medical Association scheme for extra-mural post-graduate instruction.

One of the veteran members of the Nova Scotia profession, Dr. Edward Jeffers, of Parrsboro, was recently the victim of a motoring accident, and sustained painful injuries including the fracture of two ribs. He is reported as progressing favourably.

Dr. Thomas B. Acker, of Halifax, has recently visited Prince Edward Island and Newfoundland, where he conducted orthopædic clinics for the Red Cross Society. While in Prince Edward Island he addressed the annual meeting of the Prince Edward Island Medical Society.

Dr. H. K. MacDonald, of Halifax, has been for some weeks a patient at the New England Doctors' Hospital, where he underwent a cholecystectomy. All reports received have been very satisfactory, and it is expected that he will return home about the middle of August.

W. H. HATTIE

NEW BRUNSWICK

Dr. Mayes Chase was appointed in July by the Municipal Council of Saint John to fill a vacancy on the Board of Commissioners of the General Public Hospital. Dr. Chase's appointment is gratifying in that he was the unanimous choice for the position by the physicians in Saint John.

Dr. A. B. Walter of Cambridge, Queens Co., N.B., entertained the members of the Royal Kennebecasis Yacht Club during their cruise up the St. John River and through the Washadamoak in July. During the visit of the squadron to the Narrows, full advantage was taken of Dr. Walter's well known hospitality. Several social events including a concert and a club dance were held in the doctor's house and grounds. Dr. Walter is a westerner from the Pacific coast transplanted to New Brunswick. In his practice as well as his hospitality, the east and west are agreeably blended.

It will be necessary in the very near future to provide an extension to the present Public Hospital in Moncton. Mr. A. C. Chapman, President of the Board of Directors of the institution, states that at the present time the hospital is in a very crowded condition, and a waiting list is in existence most of the time. The Moncton Hospital has become an example of efficient hospital management, under the Superintendent, Miss R. J. McMaster, R.N. We hope that

the needed increase in accommodation will be shortly forthcoming.

On August 11th, Dr. R. E. Powell and Dr. A. J. McKenzie, visited Saint John, Woodstock, Fredericton, Moncton and Bathurst under the auspices of the Canadian Medical Association extra-mural course. Dr. Powell's paper on hæmaturia was short, pithy, and forceful. His illustrations were most excellent. Dr. McKenzie spoke on "The grave anæmias" and his synopsis of past and present work on this interesting subject was well received. His conservatism in dealing with some of the newer treatments for pernicious anæmia rather surprised some of his hearers, as for some time past in New Brunswick most interesting results have been achieved by using the high cholesterol treatment of Minot. The results in these cases appear to be too spectacular and to follow treatment too closely to be accounted for by coincidence. This paper caused considerable discussion and a paper which does this cannot be more highly commended.

On August 23rd and 24th there will be held in the city of Saint John a meeting under the auspices of the New Brunswick Medical Society, when the speakers will include Sir Henry Gauvin, Dr. A. F. Miller, Dr. Stewart Pritchard of Battle Creek, Dr. A. Stanley Kirkland, Dr. R. J. Collins of River Glade, Dr. H. A. Farris, and Dr. Paul White of the Massachusetts General Hospital. This meeting will be further reported.

His friends in New Brunswick enjoyed a short visit from Dr. C. Carter of Quebec City. The doctor may be quoted as being enthusiastic over the tourist facilities in New Brunswick.

Dr. and Mrs. C. L. Emerson have returned from their honeymoon which was spent in the States. Dr. Emerson's marriage to Miss E. T. Trentowsky was the occasion of more than usual interest as both Dr. Emerson and his bride were closely connected with the General Public Hospital; Dr. Emerson being on the surgical indoor staff, and Miss Trentowsky was our popular registrar during the last seven years.

Dr. E. Bearisto, late of the interne staff of the General Public Hospital is now in practice in Trenton, New Jersey. Dr. Bearisto's departure is another example of the constant loss of our population to portions of the country which seem to offer greater opportunities.

In preparation for the coming federal elections, Dr. Murray MacLaren will again contest for the conservative party, the seat of Saint John—Albert.

A. STANLEY KIRKLAND

QUEBEC

Dr. Percy C. Leslie has just returned to Montreal after thirty years spent in ministering to the medical needs of the Chinese people, and will take up residence in Montreal.

THE LAURENTIAN SANATORIUM

Premier Taschereau, Hon. L. A. David, Hon. Jacob Nicol, Hon. J. L. Perron, and other members of the Provincial Cabinet, together with a large party of prominent men and women recently inspected the buildings of the Laurentian Sanatorium Association. This sanatorium in the beginning was erected by private subscription and operated by a committee appointed by the subscribers. After the war it was appropriated by the government for the treatment of invalided soldiers. Last September it was handed back by the provincial government to a committee consisting of the members of the Board of the Royal Edward Institute in association with other individuals appointed by the government. After the inspection short addresses were delivered by the Premier and other members of the party, all of whom spoke in high praise of the efficient management of the institution since it was taken over by the association last year. The work of the various departments was explained by the officials in charge. At the present time all the beds are filled, and the capacity of the institution has been increased from 160 to 180 beds. In spite of this increased accommodation there is a long waiting list of people desiring treatment. One of the speakers said that after careful consideration he had no hesitation in stating that 500 more beds could be filled with patients from this province if the necessary accommodation were available. In his address Mr. Colwell said "According to the last annual report of the Provincial Bureau of Health we have in the Province of Quebec a death rate from tuberculosis of 116 per 100,000 of population. In the City of Montreal, the rate is 139 per 100,000 of population. This means that over 3,000 lives are sacrificed every year to this one preventable disease. Of the deaths approximately one-third occur in the City of Montreal. From these figures we can estimate the number of cases. Since the opening of the sanatorium last September, 295 indigent, fifty-three public ward, sixty-one semi-private, and nine private cases, or a total of 418 were admitted. In most instances the cases have been much benefitted. However, it is not only to the patient that the sanatorium brings life and renewed health, but in isolating and educating the patients, it does much to check the spread of the disease to non-infected persons." The financial difficulties under which the sanatorium labours due to the large number of indigent patients, was stressed by Mr. Colwell, who, in the absence of the treasurer, presented the financial statement. According to the figures presented, the average revenue from patients amounts to $1.60 per day, while the service supplied costs approximately $2.10 a day. The result according to Mr. Colwell, is a monthly deficit of $3,000. In closing Mr. Colwell expressed the hope that measures would be taken to eliminate these monthly deficits. Still further, the sanatorium should have a home for its nurses, and probably later on a children's pavilion with a school attached.

Mr. J. Howard T. Falk, Executive Secretary of the Financial Federation, has been elected a Director of the American Association for Community Organization, and also a member of the Executive of the National Committee on Publicity Methods in Social Work.

Mr. A. K. Haywood, Medical Superintendent of the Montreal General Hospital, is of opinion that the dental clinics of the Griffintown Club and the University Settlement are filling a very real need in the community.

A Canadian Association of Professional Social Workers was formally organized at a meeting held in

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Toronto on July 3rd. Mr. G. B. Clarke, Secretary of the Montreal Family Welfare Association, is Chairman of the Provisional Council. Other Montrealers on the Council include Dr. C. A. Dawson, Director of the McGill School for Social Workers; Dr. Grant Fleming, G. H. Corbett, Esq., V. F. McAdam, Esq., Miss M. L. Moag, Miss Jane Wisdom, Miss Winnifred Learmonth, Mrs. A. Hilton, Miss W. Scott, Miss M. Friedman, Dr. J. A. Beaudouin, Prof. Arthur St. Pierre, and J. Howard T. Falk, Esq. GEORGE HALL

ONTARIO

Dr. George L. Fair, University of Toronto, class of '25, was among the successful candidates at the final (oral) examination for the Diploma of the National Board of Medical Examiners of the United States, held recently in New York City. This is the second Toronto graduate to obtain this.

MANITOBA

Winnipeg hospitals are again suffering from growing pains. Good progress is being made on the additions in Misericordia and St. Joseph's Hospitals and at the end of July the contract was awarded to Borrowman and Jamieson for a seventy-five bed addition to Grace Hospital. The new building will face on Arlington Street and will contain three maternity rooms, an operating room and an elevator. The growth of Winnipeg and of Salvation Army work is well illustrated in Grace Hospital which since the first building was erected in 1905 has been enlarged on no less than three occasions. In order to provide more space for the out-patient department at St. Boniface Hospital a residence for the internes is being built between the hospital and the Red River. The entrance to this hospital is also being improved by the laying down of cement pavements.

Three interesting lectures under the extra-mural post-graduate scheme were given on August 9th in the Medical College, Winnipeg. Professor E. L. Pope of Edmonton who practised for a number of years in Winnipeg, spoke on prognosis, Dr. G. B. Seldon of Vancouver on diagnosis and treatment of the upper abdominal surgical conditions and Dr. T. W. Walker of Saskatoon on chronic multiple arthritis.

Word has been received that the British Medical Association will hold their ninety-eighth annual meeting in Winnipeg in 1930. It is a high honour to Canada and especially the Canadian west that Winnipeg should be thought fit to serve as the meeting place of this great body which on only two occasions has met outside the British Isles. These occasions were the Montreal meeting of 1897 and the Toronto meeting of 1906.

The annual meeting of the Manitoba Medical Association will be held in the Fort Garry Hotel, Winnipeg, on Sept. 21, 22, and 23. In addition to Sir Henry Gauvin from Alton, Hants, England, the outside speakers will be Dr. Fraser B. Gurd of Montreal, Dr. Geo. C. Hale of London, Ontario, and Dr. R. R. MacGregor of Kingston, Ont. ROSS·MITCHELL

SASKATCHEWAN

The second post-graduate extra-mural course was conducted in this province by Professor L. J. Austin, Queen's University, Kingston, Ont., Professor J. G. Fitzgerald, University of Toronto, and Dr. J. H. Mullin of Hamilton, Ont.

Lectures and clinics were held at the following points:

Swift Current, Moose Jaw, Weyburn, Regina, Rosetown, Saskatoon, North Battleford, Prince Albert and Melville.

Although a good many medical men are on their holidays, there was a very fair attendance at all the meetings. The programme presented was varied and interesting and was very much appreciated by the various district medical societies.

The following doctors recently obtained their L.M.C.C., and have registered in Saskatchewan: Dr. D. A. D. Wright, Codette; Dr. G. E. Dragan, Regina; Dr. C. Rose, Speers; Dr. I. E. Brouse, Regina; Dr. L. Schulman, Saskatoon.

The annual meeting of the Saskatchewan Medical Association will be held at the University of Saskatchewan, Saskatoon, on September 20th and 21st. An excellent programme has been arranged. In addition to the papers which will be given by men from Saskatchewan, there will be four visiting speakers, namely: Sir Henry Gauvin, London, England. Dr. R. R. MacGregor, Asst. Professor of Medicine, Queen's University, Kingston. Dr. Geo. C. Hale, Professor of Medicine, Western University Medical School, London, Ont. Dr. Fraser Gurd, Associate in Surgery, McGill University, Montreal.

In addition to the above there will be an excellent programme for the entertainment of the visiting doctors and their wives, and it is expected that there will be a large attendance at the meeting.

Dr. A. C. Phillips, Punnichy has gone on an extended vacation. In the meantime his practice has been taken over by Dr. C. M. Onhauser.

Dr. A. L. Lynch, F.R.C.S., Saskatoon, and family who have been on a visit to England and the continent have returned. A. MACG. YOUNG

ALBERTA

Dr. Joseph Megas, a recent graduate of Alberta University, is now in England taking post-graduate work.

Dr. Walter Saunders of Okotoks, a 1926 graduate, is acting as *locum tenens* for Dr. Carscallen of Bowden.

Dr. Joseph L. Hardy (Laval 1911) has registered with the College of Physicians and Surgeons, Alberta.

Dr. Anerbach has taken over the practice of Dr. R. D. Hewson of New Norway, who has removed to Rockyford.

Physicians in the country districts of the province have expressed their general satisfaction and appreciation of the post-graduate courses given in July under the direction of the Canadian Medical Society.

City and country physicians alike trust that such lectures or clinics may be repeated several times a year.

Owing to the unsettled state of affairs in China, Dr. G. G. Wannop, who has been a medical missionary in that country, has returned to Alberta, where he will practise until conditions have improved in the Eastern Empire.

Mr. W. G. Hunt, Associate Secretary of the Alberta Medical Association, had the interesting experience when motoring through the "bad lands of the Red Deer Valley, of seeing Professor Sternberg of Toronto, remove the skeleton of a three horned dinosaur. It has been estimated that such horn was originally about seven feet in length.

Dr. R. P. Borden of Daysland has taken over the mine contract at Coleman, held by Dr. Tolmie, who has had to leave for the coast on account of the ill health of a member of his family.

Among the speakers at the annual meeting of the Alberta Medical Association, to be held at Edmonton in September, will be Sir Henry Gauvain of London, England, who will speak on "Tuberculosis of bones", Dr. Fraser Gurd, associate in surgery in McGill University, on (a) "Treatment of fractures involving the ankle joint" (b) "Empyema (acute and chronic)." Dr. R. R. McGregory, assistant professor of medicine in charge of pædiatrics, Queen's University, on (a) "The common nutritional disturbances of infancy as observed in practice" (b) Pyelitis of infancy." Dr. G. G. Hale, professor of medicine, Western University Medical School, on (a) "Nephritis from the standpoint of the general practitioner" (b) "The patient complains of dyspepsia." (c) "A confusing syndrome dealing with pernicious anæmia, disseminated sclerosis, and syphilis of the nervous system."

G. E. LEARMONTH

BRITISH COLUMBIA

Sir Henry Gauvin will be one of the speakers at the summer school of the Vancouver Medical Association to be held September 13th, 14th, 15th, and 16th. Other speakers this year are: Dr. George Gellhorn and Dr. Carl Hedblom, of Chicago, Dr. A. Warthin of Ann Arbor, Dr. R. R. MacGregor, of Queen's University, Dr. George Hale of Western University, and Dr. D. Fraser Gurd, of McGill University. The last three speakers are coming west and will lecture at the summer school through the courtesy of the Canadian Medical Association.

The Executive Secretary of the Provincial Association has just returned from a business trip through the northern part of the province when he visited the doctors at the following places: Powell River, Blubber Bay, Ocean Falls, Prince Rupert, Hazelton, Smithers, Telkwa, Burns Lake, Vanderhoof, Prince George, McBride and Jasper. He found an improvement on the conditions existing last year and a more optimistic spirit prevailing. Numerous problems of an economic nature were discussed. The profession in this district is eagerly awaiting the extra-mural and post-graduate course to be held in Prince Rupert and Prince George in the early part of October.

Drs. A. W. Hunter and C. H. Clement were among Vancouver men who attended the Washington University medical lecture course in Seattle at which Drs. George Dock, Fred. W. Rankin, and W. F. Braasch were the speakers.

The doctors in northern British Columbia employed by the Indian Department were pleased to hear that Mr. Ditchburn, Indian Commissioner, would visit there in the near future and endeavour to arrive at a better understanding of the work being done for the department. The physicians hope to secure a more satisfactory financial arrangement and were gratified to know of the action taken by the special committee appointed by the Canadian Medical Association.

The shortage of hospital bed accommodation in Vancouver and neighbourhood is again a live topic. Fifty thousand dollars was recently voted by the city to remodel part of the old University Building for tuberculous patients. This will to a very small extent alleviate the situation but the need is increasing. In the August number of the *Vancouver Medical Association Bulletin* the editor discusses the situation in connection with a recent timely article in the *Province* dealing with the lack of a medical faculty at the University of British Columbia.

Dr. George Seldon left on August 5th for a lecturing tour in the Prairie Provinces and expects to be away for about a month. He will lecture in connection with the scheme of post-graduate medical instruction of the Canadian Medical Association made possible through the generosity of the Sun Life Assurance Company.

Arrangements are being made with the Canadian Medical Association for an extra-mural post-graduate tour through British Columbia in the latter part of September and early October. The committee in charge has asked for three lecturers to address the meetings on the following topics: surgery, especially orthapædic surgery, and internal medicine. It is hoped that one lecture will be given showing newer tests such as Dick, Schick, etc., also on the more recent advances in obstetrics and gynæcology. The following towns

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will be visited in order named: Cranbrook, Nelson, Kamloops, Victoria, Nanaimo, New Westminster, Prince Rupert, and Prince George.

Among the British Columbia men who attended the meeting of the Pacific North West Medical Association at Spokane were Drs. A. S. Munro, B. D. Gillies, H. A. Spohn, H. A. Rawlings, F. C. McTavish and C. E. Brown. Dr. C. E. Brown was elected second Vice-President of the Association. Boise, Idaho, was chosen as the meeting place for 1927.

Dr. C. H. Bastin has been appointed a medical referee of the Workmen's Compensation Board of British Columbia in the place of Dr. D. J. Miller who has joined Dr. Marlatt in practice at Powell River.

Dr. H. H. Pitts, late of the Cleveland Clinic has arrived in Vancouver and taken up his work as pathologist to the Vancouver General Hospital vacated by the resignation of Dr. A. W. Hunter.

His many friends in Winnipeg and Vancouver will be sorry to hear of the serious illness of Dr. J. W. Good. Dr. Good has been in the Vancouver General Hospital for some weeks.

Dr. Maude E. Abbott on her way east after attending the Canadian Medical Association Convention at Victoria was the speaker at a special meeting of the Vancouver Medical Association held on July 6th. Dr. Abbott gave a very interesting account of the inception and completion of the *Osler Memorial Volume* profusely illustrated by slides taken from the many illustrations in the book. She also gave a short talk on "Congenital cardiac disease."

Dr. A. K. Connolly had recently a narrow escape from drowning in Shuswap Lake when answering an emergency call from Sorrento. Driving on to the scow to be ferried across, the brakes of his roadster failed to hold and the car shot over the apron of the scow into ten feet of water. The doctor fortunately managed to extricate himself, and was hauled aboard by the ferry man. The car was pulled ashore by means of a cable. Later in the morning, in his larger car, the doctor sustained another mishap when he overturned into a ditch. Fortunately the doctor escaped without any serious hurt.

Dr. J. P. Gussin is relieving Dr. R. A. Yeld of Edgewood during the latter's absence in England.

Dr. D. R. Learoyd of Anyox, has been spending two weeks vacation at Terrace, B.C., in which neighbourhood he gets lots of fishing and shooting.

Congratulations are extended to: Dr. and Mrs. Kingsley Terry of Blubber Bay, Texada Island, on the birth of a daughter on June 16th.

To Dr. and Mrs. L. G. C. d'Easum of Ocean Falls on the birth of a daughter on July 15th.

To Dr. and Mrs. C. H. Hankinson of Smithers on the birth of a son on June 21st. J. EWART CAMPBELL

UNITED STATES

A strong opposition is developing among the profession in the States against regulations proposed in the Smoot Bill, which was introduced into Congress about the middle of last April. The *Journal of the American Medical Association* criticises the bill severely, and says state medical associations, county medical societies and physicians should communicate their views with respect to this bill to the Secretary of the Treasury, to the Committee on Ways and Means of the House of Representatives, and to their respective senators and representatives.

The following resolution was adopted by the White Cross Association of Seattle. It would seem desirable for the Congress of the United States in connection with the consideration of such proposed amendatory legislation and before any new legislation is enacted, to review the field of narcotic regulation with a view to adopting legislation which will conform the regulation of such trade to the facts established by such an investigation.

On the Modern Medical Curriculum.—The only way to determine definitely whether a medical curriculum, ever so carefully worked out on paper, produces the desired result is to see the recent graduates in action at the bedside. Judged by this standard, I do not believe that the graduate of to-day, with all his fine scientific training, compares favourably as a general rule with the graduate of say twenty-five years ago whose training may have been a little less scientific but much more practical. The purpose of medical education is to provide for the present and future citizens of the country the best medical care, service and attention that is possible under the circumstances, and judged by this standard, present-day medical education leaves much to be desired. The country needs a relatively large number of well-trained general practitioners of medicine and a relatively small number of specialists, research workers and sanitarians; and yet the medical colleges are turning out ever-increasing numbers of the latter and relatively few of the former.—Ed. H. Ochener, *Science*, Dec. 25, 1925.

"To have striven, to have made an effort, to have been true to certain ideals—this alone is worth the struggle."—*Osler in "An Alabama Student". Quoted in Bulletin of the Harvey Club*, London, Ont.

Book Reviews

Experimental Pharmacology. As a basis for therapeutics. A text-book for students and physicians. Dr. Hans H. Meyer and Dr. Rudolf Gottlieb. Second edition in English translated by Velyien E. Henderson, Professor of Pharmacology, University of Toronto from the seventh revised German edition. 8v. 656 pages, 87 figures, partly in colours. Price $7.50. J. B. Lippincott Co., Philadelphia, London and Montreal, 1926.

We have read this book with much interest. The previous translation of the first edition of this work on pharmacology, by Professor J. T. Halsey of New Orleans, shortly after its appearance in Germany was valued highly by the profession throughout America. The names of Hans Meyer and Rudolf Gottlieb are a guarantee of careful investigation and of a clear and exact presentation of the facts of pharmacology. No better mode of approach can be employed in the study of the action of drugs, than through a review of the physiology of each organ and an endeavour to show how its functions may be altered by the exhibition of certain remedial agents. It is a mode of presentation interesting to the student and of great value to the practitioner. The selection of any remedy to correct abnormal functioning or morbid conditions in an organ must depend on a knowledge of the anatomy and physiology of that organ, and a knowledge of the action of any remedial agent on that organ. The toxic possibilities of drugs should be carefully borne in mind.

This mode of presentation accords best with the view point of the physician who demands first a diagnosis of the conditions existing in a case of disease, and follows that with a careful selection of those remedial agents upon whose action he can rely to modify disturbed function and improve abnormal conditions.

The volume commences with a discussion of the drugs acting on the nerve endings and nerve centres and through them on the system generally. By way of introduction the fundamental idea regarding the action of poisons is discussed. This is followed by a chapter written by Professor Meyer on the action of the various anæsthetics, commencing with that of alcohol and passing on to ether, chloroform and all the more modern anæsthetics. This chapter should be read carefully by every anæsthetist, especially those pages devoted to the laws of dosage. The modified theory of narcosis originated by Professor Hans Meyer, and now generally recognized is stated very clearly. Then follow chapters on the digestive and intestinal tract, on the circulation, on respiration, and on the kidneys and urinary secretion. In all these chapters an interesting introduction on the physiology of these several systems precedes the discussion of the action of the various drugs. The chapters on metabolism, on the blood, on temperature regulation, and on inflammatory processes are well worthy of study; the action of drugs in influencing abnormal conditions is explained from a physiological standpoint. The last chapter discusses the mode of action of drugs, the colloid nature of protoplasm, detoxication and antagonism, synergism and hypersensitiveness and idiosyncracy, all problems of importance to the physician in the treatment of disease.

The translation has been well performed and the facts are presented in excellent English so that reading is easy. The type is excellent, and there is a suitable number of illustrations, several of which are in colour. The book can be strongly recommended not only to the student endeavoring to master practically the difficult subject of pharmacology, but to the physician, as it presents the action of drugs on tissues and organs in a clear concise manner. Only one criticism would we offer: we note the translator has used the names given to the newer drugs by United States pharmacopœia in preference to the names employed in the British pharmacopœia. Which is the better is not for a reviewer to decide. It is a misfortune, however, for both student and physician that English speaking nations cannot arrive at some agreement in this matter.

A. D. BLACKADER

Notions Elementaires D'Oto-Rhino-Laryngologie. A L'usage Des Practiciens. Georges Liebault. Price 22 f. 236 pages. Gaston Doin & Cie., 8, Place de L'Odeon, Paris, 1926.

As indicated in the preface this volume is written especially for the general practitioner, and contains the material of fifteen clinical lectures delivered in the author's clinique at the Hopital de la Glacière, Paris. The lectures in which Dr. Liebault follows closely the teaching of Professor Moure of the school of Bordeaux cover the symptomatology, pathology, and treatment of the more important diseases met with in this section of medicine, including acute pharyngitis, diseases of the tonsil, and the paræsthetic troubles of the throat, as generally met with in neurotic individuals. Tonsillectomy is described in detail. One lecture is devoted to the conditions of hoarseness, aphonia, and vocal strain due to a defective employment of the respiratory mechanism. Nasal obstruction is discussed as to its causes and its consequences, and a chapter is given to nasal hydrorrhœa. Among other subjects which receive attention are headaches of nasal and ocular origin and epistaxis. Diseases of the ear are then taken up including external otitis, acute otitis media, chronic suppurative otitis media, and mastoiditis, and the different varieties of sclerous otitis; the last a type of lesion in which unhappily therapeutics give very poor results.

The volume is written in a clear precise style which makes reading pleasant. It is recommended to all general practitioners who desire to have the most recently acquired knowledge regarding the various ailments connected with the nose, throat and ear.

Dr. Liebault is a well-known physician of great experience, and in his lectures he has well synthetized the teaching of the school of Bordeaux so that even specialists will find a perusal of the work of value.

J. N. ROY

A Manual of Bacteriology. Clinical and applied. R. Tanner Hewlett, M.D., R.C.C.P., D.P.H. (Lond.) F.K.C., F.R.M.S., Emeritus Professor of Bacteriology in the University of London, etc. Eighth edition. 645 pages with 38 plates and 63 figures in the text. Price $5.50. The Macmillan Co. of Canada, St. Martin's House, Toronto, 1926.

The fact that this work is now in its eighth edition indicates that it has found a well established place as a text-book on bacteriology. The present edition, however, differs materially from the previous ones. It is more attractive in size, and much of the older text, having served its purpose, has been deleted. A large amount of new material has been added bringing it up to date with all the more recent advances in bacteriology.

In the earlier chapters, the nature of bacteria and their relationship to pathological processes is discussed in considerable detail, laboratory technic being described in an adequate manner. The infec-

tive process and theories of immunity are stated in a manner which encourages the reader to draw his own conclusions.

In dealing with the individual micro-organisms, a purely clinical order has been adopted. Bacteria are grouped according to the similarity of the disease incited, rather than by the biological relationship of the bacteria themselves. Such an arrangement has many advantages, though its disadvantages are equally obvious. There is a careful correlation between the clinical condition and laboratory investigations; the practical applications of various immunity reactions are described in detail in all cases where such methods are of diagnostic value. It is unusual to find in a text on bacteriology so detailed a description of the pathogenic protozoa.

Among the more recent work which has been included in this volume may be mentioned the work of Gye and Bernard on malignant disease; the Dick's researches on scarlet fever; the Orskov technic of single cell culture; the Ramon flocculation method of antitoxin standardization; the recent work on influenza, anthrax and tularæmia; the Kahn and sigma tests in syphilis. It is regrettable, however, that under the Wassermann reaction the more delicate quantitative Kolmer technic is not even mentioned in the bibliography.

As the title page suggests, emphasis is placed on the clinical and applied aspects of bacteriology; the volume is not intended to serve as a comprehensive reference book. It, however, constitutes an excellent manual for workers in a routine, bacteriological laboratory and may be regarded as a very serviceable text for medical students. D. J. MacKenzie

The Physiology of the Continuity of Life. D. Noël Paton, M.D., B.Sc., LL.D., F.R.S., Regius Professor of Physiology, University of Glasgow. 217 pages. Illustrated. Price $3.65. The Macmillan Co. Ltd. 70 Bond Street, Toronto, 1926.

Professor Noël Paton has based this readable little book on lectures delivered to students of physiology in the University of Glasgow during the past five years. The completeness of the subject matter is indicated by the chapter titles: life and heredity; reproduction; sex; determination of sex; relationship of the germ cells to the somal cells; influence of the gonads upon the soma; influence of the soma on the gonads; sexual life; nutrition of the zygote before birth (pregnancy); parturition; nutrition of the infant (suckling and milk secretion).

The presentation is reasonably critical. The interrelationship, rather than the independence of the two sexes, stands out clearly, the accidentality of maleness or femaleness being emphasized by the conditioning of sex by external stimuli in many lower species, and the occurrence of all intermediate stages and mixtures throughout the vertebrates. The author marshals the evidence against the chromosome theory of sex determination, and in favour of the quantitative metabolism of the protoplasm itself as a sex determinant. "The chromosome arrangement may be merely the morphological expression of a particular line of metabolism, and it may act as a stabilizer of a line of metabolism in the zygote, or it may be a determinant of the line of development towards male or female. So far the evidence does not establish that the correlation between chromosome distribution and sex determination is causal."

The printing and illustrations are excellent, and the book can be confidently recommended as an up-to-date presentation of a very complex subject, which, in spite of a great amount of recent research still presents many unsolved fundamental problems.

A. T. Cameron

The House-Surgeon's Vade-Mecum. Russell Howard, C.B.E., M.B., M.S., (Lond.), F.R.C.S., (Eng.), and Alan Perry, M.B., M.S. (Lond.), F.R.C.S. (Eng.), Assistant Surgeon, the London Hospital. 520 pages, illustrated. Second edition. Price 12/6. Edward Arnold & Co., 41 Maddox St., London, W.1., 1926.

This book, the first edition of which was published in 1911, is, as the title states, written rather as a guide to the house surgeon, or recent graduate, than as a text-book of surgery.

In this respect it has a very definite value; inasmuch as it deals mainly with the problems which a house surgeon is likely to be called upon to face, and it deals with these specifically.

Too often, in text books, is the practice followed, of detailing minutely the several points of diagnosis and differential diagnosis of a condition, and then, as if the author's energy had been exhausted, weakly suggesting four or five different remedies which may be tried.

The authors, in this case, have adopted a style which deals more specifically with the ordinary problems which confront a house surgeon in charge of a ward. The treatment of emergency conditions is taken up, and a definite scheme of dealing with each type is laid down. Exception may be taken by surgeons on this continent to the chapter treating of the acute infections of the hand, as the incisions advocated are on the palmar aspect of the fingers, and in the mid line, which is at variance with the present practice of the majority on this side.

The war has also taught us that to secure an adequate protection from tetanus, the prophylactic dose of serum must be larger than 500 units.

Again, in the treatment of shock, the use of fluids intravenously is only advocated as a last resort, apparently because it is deemed necessary to cut down on the vein each time for the giving of either saline solution, or blood by the citrate method. In the chapter on head injuries also, there are rules laid down which may be objected to, especially the plugging of the external auditory meatus, if there is escape of blood or cerebro-spinal fluid. And the operation of lumbar puncture is not mentioned, either as a diagnostic aid, or as a means of reducing intra-cranial pressure.

Apart from these criticisms however, the book will be exceedingly useful to the man for whom it is expressly intended.

It is clearly written, and, what is much more important, is easily read. The methods advocated for the treatment of the different conditions are clear, concise, and practical. The book is well indexed, and a given condition, with its appropriate treatment can be quickly and easily found.

While this small volume, as the preface states, is intended only as a guide, it will be found very useful to the man who has but recently graduated, and has had little or no practical experience in the meeting of emergencies, or with the common problems arising in the after-treatment of operative cases.

H. M. Elder

Medicine Monographs. Vol. VIII. Hydrogen Ion Concentration of the Blood in Health and Disease. J. Harold Austin, Professor of Research Medicine, University of Pennsylvania, and Glenn E. Cullen, Professor of Biochemistry, Vanderbilt University Medical School. 75 pages. Price $2.00. The Williams and Wilkins Co., Baltimore, 1926.

This monograph of seventy-five pages is, as the authors state in their foreword, not intended as an exhaustive review with critical analysis of all work on the subject, but is planned to include only that

work which carried out with the more recently developed technique, is at the same time accurate and of importance in clinical medicine.

The first chapter deals with general considerations of the acid-base balance of the blood, alkali reserve, etc., and the second chapter takes up the question of the normal pH values. In the third chapter, the question of the pH value of the plasma in various diseases is discussed. The findings in the various diseases, as recorded, are more of academic interest than of practical value to the practitioner. The last chapter is concerned with the various methods of determination of pH values.

There is a most complete list of references and a carefully arranged index.

It is a book which would make a more valuable addition to the library of a biochemical laboratory than the shelves of the practising physician.

L. C. MONTGOMERY

Advice to the Expectant Mother on the Care of Her Health. F. J. Browne, M.D., D.Sc., F.R.C.S.E., Professor of Obstetric Medicine in the University of London, and Director of the Obstetrical Unit at University College Hospital, London. 40 pages. Price 6d net. E. & S. Livingstone, 16 and 17 Teviot Place, Edinburgh, 1926.

This short treatise on antenatal care is written not to replace personal interviews with a physician, but to emphasize the importance of such care. It also gives the mother the details to study at leisure, which might easily be overlooked or forgotten during an office visit.

The various signs of pregnancy, symptoms of oncoming labour, the duration of pregnancy are all discussed. Suitable treatment is suggested for the minor disorders of pregnancy, such as constipation, nausea, cramps, sleeplessness, hæmorrhoids, etc. As danger signals, hæmorrhage, marked œdema, persistent headache, scanty urine, and severe vomiting are cited.

The patient is urged to notify the obstetrician at once should any of these occur. The last chapter deals with the baby, how and when it should be nursed and the care of the nipples.

In simple language, the author concisely answers many of the questions which would arise in the mind of the expectant mother and also gives her warning of symptoms which, if neglected, might lead to serious trouble.

ELEANOR PERCIVAL

Tuberculosis: Its Prevention and Treatment. John Laird. 130 pages. Price $1.65. John Wright & Sons Ltd., Bristol. The Macmillan Co., Toronto, 1926.

The opening sentence of this book reveals its true form, thus "The calcium salts must claim our first and very special consideration, as all our efforts to combat tuberculosis without their aid will end in disappointment and failure." For the greater part, the author deals with the use of calcium and other drugs in tuberculosis. There is also an appendix containing some "thoughts and reasonings" on the prevention and cure of various disorders by the administration of the salts of calcium and potassium. It is a hodge-podge of medical superstitions which might have made interesting reading half a century ago, but not to-day.

KEITH GORDON

Bainbridge and Menzies Essentials of Physiology. Fifth edition. Edited and revised by C. Lovatt Evans, D.Sc., M.R.C.S., L.R.C.P., F.R.S. 508 pages, illustrated. Price $5.00. Longmans, Green and Co., 210 Victoria St., Toronto, 1926.

This book has always appealed strongly to the medical student for whom definitely it is intended. It may be that, compared with its competitors, its restricted size has made this appeal, but if so the student has been fortuitously led to a sound selection of a companion book. In form it is ill adapted for the casual or indifferent student, nor is it intended to provide for the belated acquisition of an examination standing.

Even though all superfluous and much of the cognate matter found in discoursive text-books have been omitted so that the title "Essentials" might be realized, the lethargic student will find the sustained sequence of concentrated and compressed fact rather a heavy burden. On the other hand in these very features lies its value to the conscientious student. In conjunction with the lecture and laboratory courses now in vogue he will read it with pleasure and advantage. It is to our mind an exceedingly clearly written, well constructed and suggestive survey of the subject. The designation "Essentials", though rather a daring one, is perhaps, the title most appropriate to the actual form and purpose of the book; at least it can be said on the one side that there is practically nothing in it that is not essential.

The whole plan, printing and illustration of the book is attractive, and as has been suggested the dissertation is precise, definite and free from difficulty of interpretation. Both the original authors are now dead, and for the present edition Professor Lovatt Evans is responsible. He disclaims any extensive alteration in the text, and, in fact, it would be well for its purpose if the book were maintained much as it is without any serious disturbance of design.

G. SPENCER MELVIN

Transactions of the American Surgical Association. Vol. 43. Edited by John H. Jopson, M.D. 986 pages, illustrated. William J. Dornan, Philadelphia, 1925.

This volume is a compilation of papers and addresses by Fellows of the Association. The discussion on the various papers are also recorded. The book as a whole should appeal to the surgical specialist, for in it he will find articles putting forth ideas on diagnosis and surgical technique, which have been tried and proven, and are well past the experimental stage. The authors are men of outstanding ability and experience, coming from the various teaching centres of Canada and the United States.

A few of the subjects dealt with may be mentioned: Sequelæ of gastro-enterostomy, by Balfour; Carcinoma of the body of the uterus, by Davis; Repair of injuries to the posterior crucial ligament of the knee, by Gallie and Le Mesurier; Relation of the spleen to chronic purpura, by Mayo; Splenectomy in thrombopenic purpura, by Vincent. The volume is completed with a lengthy article on End-results in periosteal sarcoma in long bones by William B. and Bradley L. Coley.

All the articles in the volume are well written and concise and make very enjoyable reading.

The printing, quality of paper, and binding are in keeping with the quality of the contents.

R. V. B. SHIER

Pernicious Anæmia. Frank A. Evans, M.D. 178 pages. Price $2.50. The Williams & Wilkins Company, 1926.

This book is a clinical study of pernicious anæmia, written for the guidance of the general practitioner. It includes a good description of the signs and symptoms of the disease, the differential diagnosis, and a discussion of the etiology, prognosis, and treatment. Statistical deductions are largely based on a series of 111 cases of the disease, from the records of the Johns Hopkins Hospital.

A considerable space is devoted to the possible etiology of the disease. Many of the views regarding

XUM

it and some of the experimental and clinical evidence upon which they are based, are discussed. Although emphasizing the fact that its etiology disease is unknown, the author seems to line himself with the school which believes that the primary agent resides in the intestinal tract and acts on the blood and hæmatopoietic tissue through perversion of lipoid metabolism. In summing up the whole question he says in part: "Whatever the basic etiology may prove to be, when a clear interpretation of it is presented some disorder of splenic function will be an important factor, and the lipoids of the body will have much to do with it."

The differential diagnosis is discussed in some detail. Emphasis is rightly placed on the need for a careful analysis, not only of the blood but of other laboratory findings, and of the clinical signs and symptoms of any suspected case. The "subacute combined sclerosis" of Dana and others, tertiary syphilis, tropical sprue, and the parasitic infections of the intestinal tract, are specially mentioned as possible pitfalls. The differential diagnosis from these is discussed. Perhaps the nearest approach to dogmatism is the statement that patients with anæmia in which the colour index is low, probably do not have pernicious anæmia.

In the chapters on prognosis and treatment, the value of the well-known therapeutic measures: abundant diet rich in protein and vitamines, hydrochloric acid, arsenic, and blood transfusion are discussed. It must be as discouraging to the general practitioner as it is to the hæmatologist to find that the results of such a large series of cases from one of the best clinics, justifies the conclusion that no treatment has so far been suggested which can be shown to be of outstanding value in the presence of pernicious anæmia.

E. S. MILLS

Collected Papers of the Henry Ford Hospital. (First series 1915-1925). 634 pages, 151 illustrations and 42 charts. Price $8.00. Paul B. Hoeber, New York, 1926.

While a period of ten years from the opening of the hospital is covered in this series of collected papers, the majority have appeared during the last two years, first in current medical journals, but now collected in a handsome volume of over six hundred pages, well printed and well illustrated.

They represent a serious attempt on the part of the staff of this hospital to work out medical problems as represented by the patients and from close study of the individual to reach general conclusions. While the contents cover a wide range of subjects, metabolism, biochemistry, roentgenology, obstetrics and laboratory methods figure most prominently. There is a good bibliography at the end of most of the papers. Any one interested in modern scientific medicine will find in this volume much to stimulate his interest and without detracting from the conclusions reached, it may be stated that the stimulation is given by those employed in the investigation of the problems rather than in actual inferences from the observations.

ROSS MITCHELL

A Text-Book of Urology. Oswald Swinney Lowsley, A.B., M.D., F.R.C.S., and Thomas Joseph Kirwin, Ph.C., B.S., M.A., M.D. 699 pages, illustrated with 233 engravings and 13 plates. Lea & Febiger, Philadelphia and New York, 1926.

This book is based upon eighteen years of intensive study which its authors have devoted to laboratory research and clinical experience, in hospital and private practice, of the surgery of the genital and urinary tract. The authors set out to produce a teaching book, and acknowledge their great difficulty in reducing "this great mass of widely derived information to the dimensions of a practical text." Surely a problem; particularly when one recalls Sir Berkeley Moynihan's dictum, "That in the art and craft of surgery the master word is simplicity." The master word of a good text-book is simplicity; and this book comes as near this requirement as one has a right to expect.

There is an enormous amount of matter squeezed between the covers of this 700 page book. The authors are not open to the charge of leaving out anything worth while. At least, one reading of the text cannot discover any omissions. There is no confusion, however, and the order and sequence of the various urological problems tend to keep the mind alert and expectant throughout the entire text. The essence of the book is drawn from the authors own experience. But the extensive literature on urology is tapped at many points, and one finds a bibliography with no less than 653 references. A bibliography is found at the end of each of the fourteen chapters of the work. Needless to say, this is a valuable asset for the student who wishes to go beyond the rather comprehensive scope of the book itself.

As might be expected, the authors aim at presenting the very latest in every department of urology. The use of regional anæsthesia is exceedingly well described and illustrated, and its application to "most urological operations" well set forth. Many of these operations are the authors' own, who are among the pioneers of regional anæsthesia on this continent.

The chapter "Diagnostic procedures in urology," in Part II is perhaps the most complete one has seen. Here the authors amplify their dictum that "every physician should keep in practice by constantly reviewing what he learned while studying physical diagnosis in the class room." In all the conditions studied diagnosis is pre-eminent, as it should be.

An interesting and instructive feature is the large amount of historical data. The authors found themselves in rich fields when they reviewed the history of "cutting for stone"; and the antiquity of the art of urology easily established itself. One whole chapter is devoted to the history of the development of this specialty; and there are besides, numerous historical references throughout the book, such as the history of the cystoscope, etc.

A word should be said for the very ample and clear descriptions of the technique of all urological examinations and operations. They have multiplied enormously with the development of urology as a specialty, and the authors have taken great pains, both by word and illustration, to make it easy for the student to follow the different steps.

This is a book of great interest to the specialist, the student and the general practitioner.

GEORGE H. MURPHY

Biological Relations of Optically Isomeric Substances. Arthur R. Cushny, M.A., M.D., LL.D., F.R.S., Professor of Pharmacology and Materia Medica in the University of Edinburgh. 80 pages. Price $2.00 cloth, $1.00 paper. The Williams & Wilkins Co., Baltimore, 1926.

The lectures under the Dohme Foundation given at the Johns Hopkins University in 1925 are the subject matter of this little book. There are six sections. The first is elementary and concerns the elements of optical isomerism. Sections II and III comprise a recital of numerous instances of the selective action of enzymes occurring in plants and animals upon the dextrorotatory and levorotatory forms of many chemical compounds. The last three sections cover fields in which the author himself was one of the most active investigators. In Section IV the variations in pharmacological activity of the d and l forms of hyoscyamine, hyoscine, homatropine, atropine, cocaine and other optically active compounds are described. In Section V the various

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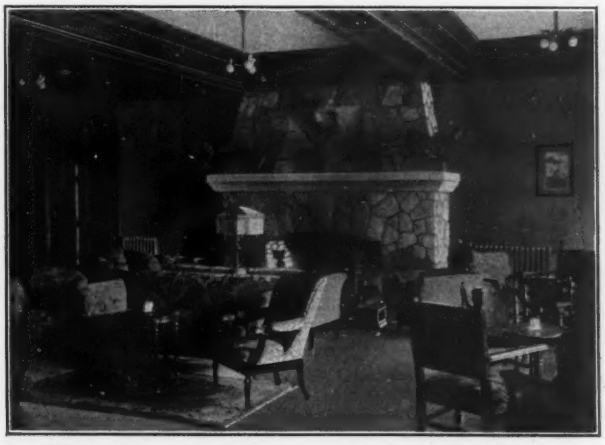

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explanations which have been suggested for the phenomena under review are considered. Just as one member of a pair of isomers may form a more insoluble compound with another optically active substance than its twin does, so Cushny conceives one as entering into action with some optically active tissue constituent more readily than the other. Explanations based upon different degrees of tissue absorption, and differential destruction are also discussed. In the last section the relative importance of the general architecture of the molecule, the presence of an hydroxyl group in a side chain and the existence of an asymmetric carbon atom in the molecule are discussed. Given the first and last the presence or absence of an hydroxyl group has a great influence; in the case of hyoscyamine its presence augments the activity 200-300 times.

The book is written in Cushny's critical fashion and leaves the impression that he has taken the reader as far as possible along a narrow and difficult road whose construction is as yet poor and whose final length is uncertain.

R. L. STEHLE

Epilepsy; A Functional Mental Illness; its Treatment. R. G. Rows, M.D., Pathologist and Medical Officer, County Mental Hospital, Prestwich, Manchester and W. E. Bond, M.R.C.S., Eng., L.R.C.P., Lond., A Senior Medical Officer to the Ministry of Pensions. 138 pages. Price 8/-. H. K. Lewis & Co. Ltd., 28 Gower Place, W.C.1., 1926.

It is interesting to note the considerable reawakening of interest in the subject of epilepsy. In the past few years many books and articles have appeared, and while too many of them have had their usefulness impaired by the narrow one-sided views of their authors, their appearance alone indicates a growing curiosity and increasing desire to review this intricate problem from every possible standpoint. The camps are divided between the more or less vociferous exponents of what Southard aptly called the "brain spot" and "mind twist" theories.

It seems that the late Dr. Rows and his collaborator Dr. Bond have attempted something in the nature of a compromise but with very definite leanings toward the views of those who regard "emotional" unbalance as *the* important factor in the genesis and evolution of epilepsy. Many of their views correspond closely with those of L. Pierce Clark as he enunciated them some ten years ago. It is probable that the authors were unacquainted with Clark's work since no mention of it occurs in the book.

The surviving author notes in his preface that owing to the untimely death of his brilliant senior, the work was left in a somewhat "crude" state for want of reorganization and sifting of material. This "crudeness' is unfortunately evident enough, since there are large sections of the book devoted to intricacies of psychology and brain physiology, that remain unrelated or but poorly related to the clinical phenomena as described, or to the authors' own views of epilepsy as a functional mental illness. These sections are by no means valueless; one finds in them an accumulation of psychological facts of very great value. The defect lies in the lack of correlation just noted. Knowing the worthy attainments and thorough scholarship of the authors, one is quite prepared to agree with Dr. Bond that these defects are defects of organization of material and thought rather than defects of knowledge. With further opportunity to work together, the authors would have turned out an exceedingly valuable study.

As it is, the book will have a very limited appeal. It is largely beyond the reach of students, and few general practitioners will have the time or patience to work their way through the descriptions of intricate nervous and mental mechanisms given. About the only ones that will find real interest in the book will be neurologists and psychiatrists, especially those with rather more than the usual amount of patience and perseverance. Such will find the book to contain a good general review of most of the current theories of epilepsy, some interesting clinical reports and an extensive section on the relationship of epilepsy to other types of mental disorder, but all requiring a certain amount of "mining".

In the section on Treatment, the authors state the general lines of endeavour as (1) explanation (2) exploration (3) re-education; these terms relating to the patient's psychic life. The object of treatment is stated by them to be: (1) To lead the patient to realize that epilepsy is not necessarily an organic disease of the brain, but that it is a sign of a disturbance of consciousness which is always preceded or accompanied by an emotional state. (2) To find in past experiences the associated memories which will explain the apparently abnormal reactions which the patient exhibits. (3) To teach the patient to eradicate the pernicious habits of reaction acquired during a prolonged illness of this nature, to readjust his emotional reactions and, (4) most of all to help himself. Drugs of any description are worse than useless in that they deprive the patient of mental adroitness and even of his chance of recovery.

A. T. MATHERS

Recent Advances in Obstetrics and Gynæcology. Aleck W. Bourne, B.A., M.B., B.Ch., F.R.C.S. 344 pages, 58 illustrations. Price $3.75. The Macmillan Co. Canada, Toronto, 1926.

This book is an excellent review of recent work reported principally in the *Journal of Obstetrics and Gynæcology of the British Empire*, with a relative dearth of work reported in journals on this side of the world. The author, very rightly, gives his own judgment on many controversial subjects.

The contents are divided into the two main branches, obstetrics and gynæcology. Under obstetrics, Chapter I, "Ante-natal care," the author advises the correction of breech presentations between the 36-38th week. In pelvic mensuration he makes no use of outlet measurements, which, to many of us in this country, are as necessary, if not more so, than inlet measurements. He makes no mention of regular blood pressure readings. Chapter II, "A review of maternal mortality," is also unsatisfactory. The author surely does not admit into hospital every woman with any albumen in the urine. Chapter III, "The causation of fœtal death," is excellent, being principally Holland's monumental work. Chapter IV, "The chemistry of the blood and urine in pregnancy," is an excellent review with too little notice taken of our own Canadian workers in this field. His remark that "a growing clinical experience is more safely to be relied upon than the multiple reports of the most accurate chemical workers" is an incentive to every practitioner to accurately note clinical signs developing antepartum, and a challenge to the biochemists. Chapter V, "Remarks on antepartum hæmorrhage," features the work of Gordon Ley. Chapter VI, "The prognosis and treatment of eclampsia," is excellent, wisely urging against Cæsarean section, which in this country has been overdone. Chapter VII, "The scope and necessity of Cæsarean section," is sadly deficient in that no mention is made of the low section which, to our judgment, has been one of the most important recent advances in obstetrics. The work of Eardley Holland of 1920 is fully drawn upon. The last chapter under obstetrics is devoted to "Puerperal sepsis" and is excellent.

Part II, Gynæcology, is, on the whole, less satisfying than Part I. The first chapter on "General progress in gynæcology," gives, very justly, great credit to Fothergill for his insistence on vaginal plastics being sufficient to cure all cases of prolapse

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without resort to laparotomy. One remark should be pondered seriously by all embryo surgeons, "The performance of an abdominal fixation alone for prolapse, *i.e.*, without repair of the perinæum at the same time, is, of course, an indefensible procedure." Bourne's suggestion of surgery in acute salpingitis will, we feel sure, be strongly criticized. His opinion on gland extracts is timely. Chapter X on "Sterility" is deficient. Rubin's work is described incompletely. The use of an anæsthetic for the Rubin test is, in our view unnecessary and harmful. The chapter on "Endometrioma of the ovary," is not up to date. The remaining three chapters, on the use of "X-rays in obstetrics and gynæcology," (Webster), "Electrotherapeutics in gynæcology," (Wilson) and "Radium in the treatment of carcinoma of the cervix," (Donaldson), appear excellent, but we do not feel qualified to review these minutely.

Taken altogether the book will be read with profit by practitioners and specialists alike, but the latter, in this country, will want to add and subtract in places.

J. J. MASON

Incapacity or Disablement in its Medical Aspects. E. M. Brockbank, M.B.E., M.D., F.R.C.P. 120 pages. Price 4/6. H. K. Lewis & Co., 28 Gower Place, London, W.C.1, 1926.

The first section, which is brief, deals largely with medico-legal features, which apply in Great Britain but not here. The second section takes up causes of disabilities alphabetically, and symptoms are discussed not purely as evidence of disease but as actual causes of lowered efficiency in workmen. The text is rich in illustrative examples and the author's judgments appear eminently fair. This makes the work a useful handbook for those having to make decisions regarding the degree of disability to workers caused by a great number of injuries and diseases. To such the volume can be recommended.

W. F. DEY

The Diabetic Life. Its Control by Diet and Insulin. R. D. Lawrence, M.A., M.D., Chemical Pathologist and Lecturer in Chemical Pathology, King's College Hospital. Second edition. 167 pages, 11 illustrations. Price $2.25. The Macmillan Co. of Canada Ltd., Toronto, 1926.

On the title page this is described as a practical manual for practitioners and patients, and in the preface to the first edition, the author says, the object of the book is to bring the modern treatment of diabetes within the scope of both the general practitioner and the patient.

The first two chapters describe normal and abnormal metabolism in an exceptionally clear manner, and the discovery and the properties of insulin. Chapters 3 and 4 deal with the symptoms and diagnosis of diabetes. The remainder of the book, some hundred pages, are given up almost entirely to treatment by diet and insulin.

What the author calls his "line-ration scheme" is an arrangement of foods in two lists. In one list, printed in black are weighed amounts of food which contain 5 grm. of carbohydrate; in the other, printed in red, are weighed amounts of food containing 7½ grm. of protein and 15 grm. of fat. A "line-ration", is any one red with any one black line and contains protein, carbohydrate and fat in known amounts and in the proper proportions. By the use of these lists any individual diet can be easily and correctly worked out and the patient given quiqte a wide choice of foods.

The indications and dosage of insulin is then dealt with. Special instructions are given for the treatment of coma, of diabetes in children, of pregnancy, and for the preparation of diabetic patients for operations. The book concludes with a list of foods, certain weights of which are equivalent to five grm. of carbohydrate.

The clearness and completeness of the book makes it admirably adapted for the use of those for whom it was written. It is not a book for the specialist, but for the well informed practitioner, who has to treat diabetes, in addition to many other things; most of it could also be understood by, and would be of great interest to an intelligent patient.

R. H. M. HARDISTY

Auricular Fibrillation. J. G. Emanuel, B.Sc., M.D., F.R.C.P., Physician to the Queen's Hospital, Birmingham, etc. 31 pages. Price 3/6 net. Cornish Brothers Ltd., 39 New Street, Birmingham, 1926.

This condition has been made the subject of the Ingleby lectures delivered at the University of Birmingham. The author lays particular emphasis on the part played by toxins in auricular fibrillation, and he believes that in some cases their effect is to produce a slowing of the heart instead of the usual tachycardia. He points out further that auricular fibrillation is only found to occur in cases in which the heart has already been affected by such diseases as rheumatism, syphilis, etc. These are predisposing causes. In his opinion it cannot be said that there is any one special exciting cause: an analysis of fifty-two cases of fibrillation showed that the condition came on suddenly in an extremely varied number of conditions, many of them entailing no special effort whatever. The difficulty of quinidine therapy he thinks is in the choice of patient in whom to employ, rather than in the use of the drug itself. He would lay down no rule as to the type of case to be so treated, but considers that provided the circulation shows a certain degree of efficiency any case of fibrillation is suitable for quinidine treatment.

His conclusion is that in the treatment of cardiac failure with auricular fibrillation, digitalis is a specific remedy and quinidine a valuable coadjutor.

H. E. MACDERMOT

Canadian Medical Directory and Physician's Handbook 1926. Ninth edition. 451 pages. Price paper cover $7.00. Cloth bound $8.00. Published and printed by A. P. Pigeon, Ltd., 109 Ontario St. E., Montreal.

This now well established publication fills a need which becomes the more pressing as the medical profession in Canada enlarges its boundaries. There is useful information in regard to the medical schools and the medical act, but the method of indexing is a little difficult to follow. In some instances the information given is not the latest. As it is the only Canadian Medical Directory published it can be recommended to those in need of such a reference volume. It contains much useful information regarding not only every practising physician, but also the various medical organizations, the faculties of medicine, in the several universities, with a brief historical sketch of each, and a copy of the rules for entrance and graduation of students in medicine and dentistry, with much other information very useful to the general practitioner. The volume is to be commended to the profession in every province.

H. E. MACDERMOT